

STA 4202/ STA5206 Course Syllabus Spring 2015

Instructor: Dr. Steven Ramsier

Office: 106A OSB

Office hours: 12:30 to 1:30 PM on Wednesdays and 11:00 AM to Noon on Thursdays.

E-mail: ramsier@stat.fsu.edu

Phone: 644-3218 (Main Statistics office phone – currently no direct line to the instructor)

Fax: 644-5271

Class URL: <http://campus.fsu.edu>

Class Meeting Times and Place: 9:30-10:45 Tu Th in HCB 314

No Exam During Finals Week

Course Materials:

Optional Text: *Design and Analysis of Experiments*, 8th edition, by Douglas C. Montgomery
Selected sections from Chapters 1-8, 11, 13, 14, and 15 will be covered.

Software: Access to SAS/Studio SAS or *University Edition*; SAS 9.4 (Windows Version) is available on campus computer labs but differs slightly from the other two versions which will be used in class. Access to JMP 11.

Prerequisite: STA 2122, 2171, 3032, or QMB 3200

Grading:

Grade Composition (1000 Total Points Available)

Two Exams (200 points each)	400
Assignments	400
Case Study/Projects	200

Grades Assignments (Total Points Obtained)

A	930 - 1000	B-	800 - 829	D+	670 - 699
A-	900 - 929	C+	770 - 799	D	630 - 669
B+	870 - 899	C	730 - 769	D-	600 - 629
B	830 - 869	C-	700 - 729	F	0 - 599

Course Description: One and two-way classifications, nesting, blocking, multiple comparisons, incomplete designs, variance components, factorial designs, confounding.

Course Objectives:

Upon successful course completion a student will be able to...

1. State the model, assumptions, advantages, and disadvantages for various designs.
2. Use statistical software to analyze various designs.
3. Apply statistical techniques in research questions and future classes courses in his/her discipline.
4. Describe statistical analyses in non-statistical terms.
5. Discuss the seriousness of violations to assumptions, how to check them, and how to remedy them.
6. Recognize a design and provide the appropriate ANOVA table, give an experimental plan.
7. Compare advantages and disadvantages of competing designs for a given situation.
8. Explain the major concepts encountered in this course.

Exams:

Two 75-minute exams will be given. Both exams are open book and open notes. Please note that referring to notes on any electronic device (laptop, table, phone, etc.) is only permitted if all wireless communication features are disabled. No final will be given and the second exam will only directly cover material presented following the first exam.

Homework:

Suggested homework problems will be assigned at the end of each lecture. It is the responsibility of the student to keep current with the homework. Although homework will not be collected, this is the best opportunity to prepare for the project and exams.

Assignments:

You will be asked to complete take-home data analysis assignments. These may involve written interpretations, derivations, analysis of data sets, and application of computer software. Graduate students will generally be asked to complete additional, more involved problems than undergraduates in these assignments. We will be primarily using the data analysis software, SAS and JMP. Students are encouraged to work together on the analyses; however, write-ups must be done independently, in each student's own words.

Case Study/Projects:

Undergraduates will work on one case study and one project and graduate students will work on two projects. Around midterm of the semester, undergraduates will be given a case study which involves framing a problem for statistical analysis, solving the problem statistically, and providing an interpretation in really world terms. At the same time graduate students will complete a project consisting of applying an ANOVA model to observational data of their own choosing. There will be a written report due for this graduate student project.

The final project will involve all students and be due at the end of the semester. Students may work in teams of two or three and will involve designing your very own experiment, conducting it, and analyzing it. You will specifically identify a question of interest to you, design and plan an experiment, conduct your experiment, statistically analyze the results, and give a brief presentation of your study in poster session format.

Missed Exams:

There are generally no make-up exams. If you miss an exam, the absence must be excused. Excused absences are granted for emergencies such as a death in the family or treatment of an injury or illness at a medical facility.

Documentation is required. It is up to the discretion of the instructor as to how to handle excused absences from exams. For exam conflicts resulting from university organizational events, weddings, work related trips, etc. that are known in advance, the instructor will handle them on an individual basis (usually provisions for taking the exam early).

Late Assignments and Projects:

Assignments and written project reports must be turned in at the beginning of the class period on the date they are due. **Late assignments or projects are generally not accepted.** If some emergency prevents you from turning them in on time, written documentation must be submitted to the instructor for consideration.

Grade Complaints:

Give the instructor your work in question and **a clear, brief, written explanation** of why you think you deserve additional credit. The written statement must be provided **within one week** after the work is graded and available for you (on the date it was turned back to the class).

Tentative Schedule:

	Week of	Topics	Chapters	Suggested Problems	Assessments	
Jan.	6	Introduction	Ch. 1			
	13,15	Comparative Experiments, Single Factor ANOVA*	Ch. 2, Ch. 3	2.15,20,26,32 / 3.3,7		
	20,22	Fixed Effects, Model Checking	Ch. 3	3.9,10,14,44		
	27,29	Sample Size, Randomized Block Designs	Ch. 3,4	3.45,47 / 4.10,13,14	Assignment 1	Due Jan. 29
Feb.	3,5	More Block Designs, Intro to Factorials	Ch. 4, Ch. 5	4.4 / 5.1,6,7		
	10,12	Two-Factor Designs, Interaction	Ch. 5	5.19,20	Assignment 2	Due Feb. 12
	17,19	General Factorial Design	Ch. 5	5.29		
	24,26	Exam #1 , Random Effects, Nested Designs	Ch. 13, Ch. 14	13.1,5,9 / 14.1,19	Exam #1 -- Feb. 24	
Mar.	3,5	Repeated Measures, 2 ^k Designs	Ch 15, Ch. 6	15.21 / 6.5,6,20,28,31,32	Midterm Proj.	Due Mar. 5
	10,12	Spring Break				
	17,19	Blocking 2 ^k Designs, Fractional Factorials	Ch.7, Ch. 8	7.7,9 / 8.3,9		
	24,26	Confounding in 2 ^{k-p} Designs, Alias Structure	Ch. 8	8.27,28		
	31, Apr. 2	Resolution, Fold-overs, Sequential Experimentation	Ch. 8	8.4,30	Assignment 3	Due Mar. 31
Apr.	7,9	Options for Sequential Experimentation, Exam #2	Ch. 8	8.5,51	Exam #2 -- Apr. 9	
	14,16	Response Surface Designs, Project Time	Ch. 11	11.1		
	21,23	Project Presentations			Final Project	Due Apr. 21 or 23

* Includes video lectures for the week's material

University Attendance Policy:

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor System:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>)

Students with Disabilities:

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class. This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice) (850) 644-8504 (TDD)
sdrc@admin.fsu.edu
<http://www.disabilitycenter.fsu.edu>

Syllabus Change Policy:

This syllabus is a guide for the course and is subject to change with advance notice.