

9:30-10:45a.m. Tues/Thrs, 204 Hutcheson
CRN # 14697

Professor John P. Morgan
Office 210A Hutcheson
Phone 231-9701
Email jpmorgan@vt.edu
Office Hours Monday 12:50-1:50
Tuesday 10:50-11:50
Wednesday 12:50-1:50
Thursday 10:50-11:50
... and by appointment

Prerequisite: STAT 5044 or STAT 5616. Those not possessing the prerequisite may be ill-equipped for this course and should speak with Professor Morgan as soon as possible. The course level is aimed at 2nd-semester graduate students in statistics. In addition to a working knowledge of basic statistical testing and estimation concepts, procedures, and terminology, you should already know one-way and two-way ANOVA (including contrasts and multiple comparisons).

Required Text: *Design and Analysis of Experiments* by Angela Dean and Dan Voss (Springer, 1998). There is a supplementary text (not required, but some readings will be assigned) of the same title by Klaus Hinkelmann and Oscar Kempthorne (Wiley, 1994). Both are on reserve in Newman library.

If You Want Additional Reading: The text *Design and Analysis - A Researcher's Handbook* is at a lower level and does not cover all of our topics. However, if you are not thoroughly familiar with the logic of analysis of variance, you may find the detailed, mostly non-technical discussions in the first seven chapters useful. Likewise a portion of *Applied Linear Regression Models* is devoted to anova issues for basic designed experiments. Both are on reserve.

Course Outline: In the primary text our goal is to cover chapters 1-7, 9-12, 15, 19. Supporting material from the supplementary text will be cited as needed, especially for the two important topics *randomization theory* and *subsampling*. The two books vary greatly in their notational conventions; we will stick exclusively with that used by Dean & Voss. The webpage for their book is www.wright.edu/~dan.voss/book/DeanVoss.html, where you will find SAS code files, data files, and corrections.

Description in Course Catalog: Principles and concepts of experimental design; systematic overview and discussion of basic designs from the point of view of blocking, error reduction, and treatment structure; and development of analysis based on linear models.

Grade Allocation: Your course grade will be based upon a series of homework assignments, a midterm exam, a group project, and a final exam. The assignments will compose 30% of the grade, the midterm 30%, the project 10%, and the final the remaining 30%. Midterm date is Wednesday, March 1, 6-8pm. The final exam is Tuesday, May 9, 10:05am-12:05pm.

Grading Details: The midterm is closed notes and closed book. The final examination is comprehensive. Homework is to be turned in at the announced due date during class period. No late homework is accepted unless a satisfactory explanation is provided to the professor prior to the due date and time. Feel free to discuss assignments with other students, but the work handed in *must be exclusively your own*.

Project: Students will work in groups with up to 4 members to design, run, and analyze an experiment. Our primary text works through many examples of such experiments. Final reports for others can be found at <http://bcs.wiley.com/he-bcs/Books?action=resource&bcsId=2172&itemId=047148735X&resourceId=4552>

Course Assistance: Weekly office hours (see above) do not require an appointment, and will always be held unless announced in advance (check Blackboard).

Computing: We will be using the SAS system for statistical analysis. It is available at various labs about campus, or a personal lease can be purchased from Computer Purchasing. Further information is available by following the links at http://www.computing.vt.edu/software_and_hardware

Course Website: Assignments, handouts, and other relevant documents, including all web links on this page, will be posted on *Blackboard*.

Honor System: The tenets of the Virginia Tech Graduate Honor Code will be strictly enforced on all graded work. For more information on the Graduate Honor Code see <http://www.cs.vt.edu/gpc/gradhc.html>