

MGSC 892/ECON 892

- Course:** Experimental Research Methods (Analysis of Variance and Experimental Design for Business)
- Time:** TBA
- Instructor:** Kathleen Whitcomb
- Office:** 707 B.A./777-2947/754-0119
- Office Hours:** ??????????????????????????????
- Course Objective:** Students who successfully complete this course will be able to plan and analyze a wide variety of experimental studies. Emphasis will be placed on statistical methodologies (experimental designs and data analytic techniques) that are most often encountered in industrial studies. These include experimental studies in behavioral management, operations, finance, economics, and marketing research.
- Text:** Neter, Wasserman, Kutner, and Nachtsheim, Applied Linear Statistical Models, 4th edition, 1996, Richard D. Irwin.
- Supplementary References:** Box, G.E.P., Hunter, W.G., and Hunter, J.S., Statistics for Experimenters, 1978, John Wiley.
- Box, G.E.P., and Draper, N. R., Empirical Model Building and Response Surfaces, 1986, John Wiley and Sons.
- Cochran, W.G., and Cox, G.M., Experimental Designs, 2nd edition, 1957, John Wiley and Sons.
- Winer, B.J., Brown, D.R., and Michels, K.M., Statistical Principles in Experimental Design, 3rd edition, 1991, McGraw-Hill, New York.
- Course Format:** The course format will consist of lectures and problem sets (approximately 10 problem sets). The lecture notes will be provided to you.

Grading: Final grades are determined by homeworks, two in-class exams and a final exam. The final exam will be cumulative and have in-class and take-home portions. Your home-works are worth 25% of your grade. The two in-class exams are worth 20% each and the final is worth 35% of your grade.

<u>Week Starting:</u>	<u>Course Outline</u>	<u>Readings from NWKN</u>
Jan. 12 th	Review	
Jan. 19 th	Single factor ANOVA: fixed effect models Analysis of factor effects; MLK holiday on Monday	Ch. 16
Jan. 26 th	Multiple comparison procedures; single degree of freedom tests	Ch. 17
Feb. 2 nd	Error analysis; transformations; Two-Factor Anova	Ch. 18 Ch. 19
Feb. 9 th	Two factor ANOVA; analysis of two factor studies; interactions;	Ch. 19-21
Feb. 16 th	Two-Factor Studies—Unequal Sample Sizes Three-Factor Studies	Ch. 22 Ch. 23
Feb. 23 rd	EXAM I Random Effects Model; Analysis of covariance	Ch. 24-25
Mar. 1 st	Experimental Design; power of the F-test. Randomized block designs	Ch. 26.1-26.6 Ch. 27
March 8 th	Spring break	
March 15 th	Nested Designs and subsampling	Ch. 28
March 22 nd	Getting EMS's for tests; more on nested designs	Notes
March 29 th	EXAM II Repeated measures designs	Ch. 29
April 5 th	Latin Squares Designs	Ch. 30
April 12 th	2-level factorial designs; 2-level fractional factorial.	Ch. 31
April 19 th	Mixed factorial experiments; Response surface designs	Ch. 32
April 26 th	Catch-up and review	