George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  ___X__ NEW  ____ MODIFY  ____ DELETE

Local Unit:  Economics  Graduate Council Approval Date:  

Course Abbreviation:  ECON  Course Number:  635

Full Course Title:  Design and Analysis of Experiments

Abbreviated Course Title (24 characters max.):

Credit hours:  3:3:0  Program of Record:  MA, Economics

Repeatable for Credit?  ___ D=Yes, not within same term  Up to hours  
                     ___ T=Yes, within the same term  Up to  hours  
                     _X__ N=Cannot be repeated for credit

Activity Code (please indicate):  _X_ Lecture (LEC) ___ Lab (LAB) ___ Recitation (RCT) 
                               ___ Studio (STU) ___ Internship (INT) ___ Independent Study (IND) ___ Seminar (SEM)

Catalog Credit Format  3 : 3 : 0  Course Level:  GF(500-600) ___X__ GA(700+) ____

Maximum Enrollment:  30  For NEW courses, first term to be offered:  F04

Prerequisites or corequisites:  Permission of the instructor.

Catalog Description (35 words or less)  Please use catalog format and attach a copy of the syllabus for new courses.:

Topics include comparing two treatments, comparing more than two treatments, and the computation and interpretation of analysis of variance. Randomized block, Latin Square and Factorial designs are discussed. Applications to economics experiments are discussed.

For MODIFIED or DELETED courses as appropriate:
Last term offered:  Previous Course Abbreviation:  Previous number:
Description of modification:

APPROVAL SIGNATURES:
Submitted by:  ____Daniel Houser____ email: ___ dhouser@gmu.edu__________
Department/Program:  ____Don Boudreaux_______ Date: ____1/31/04__________
College Committee:  _____________________________ Date: __________________
Graduate Council Representative: __________________________ Date: __________________
GEORGE MASON UNIVERSITY  
Course Coordination Form

Approval from other units:

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Graduate Council approval: __________________________________________  Date: __________

Graduate Council representative: ____________________________  Date: __________

Provost Office representative: ____________________________  Date: __________
Course Information

Overview: This class provides an introduction to the design and analysis of economics experiments. The topics covered will be useful to anybody interested in running scientific experiments, but will be primarily geared toward behavioral experiments as conducted by economists and psychologists.

Grades: Grades are based on performance on exams and home assignments.

Office Hours: Professor Houser will hold office hours from 10:30-11:30 MW in Fairfax. Ms. Xiao will hold office hours in a time and place of her choosing.

Topics:

1. Science, Experiments and Statistics
2. Comparing two treatments
   a. Probability distributions, parameters, statistics’
   b. Reference sets and distributions
   c. Normal, t, chi-square and F distributions
3. Random sampling and the declaration of independence
   a. Statistical dependence and independence.
   b. Sufficiency
4. Randomization and blocking with paired comparisons
   a. Boys’ shoes example
   b. Blocking and randomization
   c. Noise and models
   d. Blocking in comparative experiments
5. Significance tests and confidence intervals
   a. Inferences about differences in means and variances
   b. Inferences about proportions: The binomial distribution
   c. Inferences about Frequencies: The Poisson distribution
   d. Contingency tables and tests of association
6. Comparing k treatment means
   a. Amount of variation due to within and between treatments
   b. ANOVA
   c. Multiple comparisons
7. Randomized blocks and two-way factorial designs
   a. Model and ANOVA for randomized block designs
   b. Model and ANOVA for factorial designs
8. Designs with more than one blocking variable
   a. Latin squares
   b. Greaco and hyper-graeco latin squares
   c. Balanced incomplete block designs
9. Modeling
   a. The problem of experimental design
   b. Comprehensive versus sequential approach to experimental investigations
10. Factorial designs with blocking
11. Fractional factorial designs with blocking
12. Modeling and regression analysis
   a. Fixed, random and mixed effect models
13. Response surface methods
14. Dependence, time series and repeated measures.

**Students with disabilities:** Students with Faculty Contact Sheets for this class need to present them to the instructor as soon as possible. Other students requiring reasonable accommodations, as covered under the Americans with Disabilities Act, should contact the Disability Resource Center (DRC) to open up a DRC file and discuss needed accommodations. Questions and requests for reasonable accommodations should be directed to DRC, 234 SUB I, phone (7030) 993.2474 or email dwyne@gmu.edu.

**Honor code:** George Mason University is an honor code university. Students pledge not to cheat, lie, plagiarize or steal in academic matters.