***Statistics 620 – Experimental Design II (Summer 2007)***

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| **Instructor:** | Dr. R. N. "Herb" McGrath |
| **Office** | BA 347 |
| **Email:** | Rnmcgra@bgsu.edu |
| **Phone:** | (419) 372-8451 |
| **Office Hours:** | M, W 1:30-3:00 or by appointment |
| **Class Meetings** | M,W 9:00-10:35 BAA 1000, T,Th 9:00-10:35 BAA2003 |

**Optional Texts:** Montgomery, D.C. (2005), *Design and Analysis of Experiments*, Sixth Edition, Wiley.

Dean, A. and Voss, D. (1999) *Design and Analysis of Experiments*, Springer-Verlag.

**Prerequisite:** STAT 508, equivalent, or consent of instructor.

**Course Description:** Review of basic experimental designs and their analysis, split plot designs, repeated measures designs, analysis of covariance, optimal designs, computer experiments, unbalanced data.

**Additional References** Kuehl, R. O. (1994), *Statistical Principles of Research Design and Analysis*, Duxbury Press.

Neter, J., Kutner, M. H., Nachtsheim, C. J., and Wasserman, W. (1996), *Applied Linear Statistical Models*, Fourth Edition, Irwin.

Steel, R. G. D., Torrie, J. H., and Dickey, D. A. (1997) *Principles and Procedures of Statistics: A Biomedical Approach*, Third Edition, McGraw-Hill

**Homework:** Homework will occasionally be assigned and collected. I anticipate approximately four or five assignments.

**Project:** The project, which requires you to read and report on a design-related paper, has been posted under Assignments in Blackboard. Note that you may select, to some extent, when to complete the project.

**Academic Honesty:** Violation of the BGSU Code of Academic Conduct will not be tolerated and will be handled through the university process.

## Course Outline

The topics covered (and their planned order of presentation) are subject to change. The chapters below refer to the Dean and Voss as well as the Montgomery books. Other sources will be used to provide much of the material, especially on repeated measures, optimal designs, and computer experiments.

| Topic | Dean and Voss | Montgomery |
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| Completely randomized design, One-way ANOVA | Chapters 3, 4, 5 | Chapter 3 |
| Randomized complete block designs | Chapter 10 | Chapter 4 |
| Two factor factorial designs | Chapter 6 | Chapter 5 |
| Random and mixed effect models, expected mean squares | Chapter 17 | Chapter 13 |
| Nested designs | Chapter 18 | Chapter 14 |
| Split plot designs | Chapter 19 | Chapter 14 |
| Repeated measures designs | | |
| Analysis of covariance | Chapter 9 | Chapter 15 |
| Optimal Designs | | |
| Computer Experiments | | |
| Unbalanced data | | Chapter 15 |
| Project presentations | | |

## Software

I will mainly use SAS for class examples. Occasionally, I will use Minitab. Both of these packages are available in all BA labs (as well as other campus labs). You may use whatever package you want (SAS, Minitab, SPSS, Splus or R, Design Expert, etc.) but I may not be able to answer some questions about software other than SAS and Minitab.

## Grading

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| Exam 1 (tentatively scheduled for June 7) | 30% |
| Exam 2 (June 21) | 30% |
| Homework | 20% |
| Project written report | 10% |
| Project presentation | 10% |

I will be using Blackboard for this course. You should familiarize yourself with MyBGSU and access this course web page from there. I will post announcements and updates frequently so you are expected to check the site daily. I will post handouts under the course documents link and homework under the assignments link.