Course: Data Analysis  
Class Time: TTR 2:00pm -3:40pm in Science 3550  
Prerequisite: Math. 1202 or 1302  
Instructor: Jong-Min Kim, Statistics  
Office: 2380 Science (Tel:589-6341)  
Office Hours: 9:00-9:50 Tu, Th, and 10:30-11:20 W. or by appointment.  
email: jongmink@morris.umn.edu  
Webpage: http://cda.mrs.umn.edu/~jongmink/stat3601/ 

Required Course Materials: 


Optional Course Material and References: 


Course Description: 

STAT 3601 is an applied course that introduces statistical methods associated with linear models used in designed experiments. In particular, we will discuss one-way ANOVA models, multiple comparison methods, linear regression, the general linear model in matrix form, model building and diagnostics, ANCOVA, factorial designs, blocking, random and mixed effects models, repeated measures, subsampling, and splitplot designs. I may also decide to add supplementary material such as advanced regression diagnostics, linear model theory, categorical regression, or other topics. 

Homework: 

There will be homework problems given in most class periods. No late homework will be accepted without a valid excuse. 

Examinations: 

One midterm examination and a final exam will be given. No make-up exams will be given. You may also use a calculator. The tentative time table for the examinations is given below: 

Midterm 1 Science 3550 2:00 pm - 3:40 pm Thu, October 16 
Final Exam Science 3550 4:00 pm - 6:00 am Tues, December 16
Grading

Grades for the course will be determined using the following weights for each component of the course:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>100 pts.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200 pts.</td>
</tr>
<tr>
<td>Quiz</td>
<td>100 pts.</td>
</tr>
<tr>
<td>Homework</td>
<td>100 pts.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>500 pts.</td>
</tr>
</tbody>
</table>

Trends on the scores, attendance to the lectures, class participation etc. will be considered on the determination of the final grades.

Rules for dropping and adding classes are the same as those for the university. Students are expected to attend all classes. University rules associated with academic dishonesty will be followed.

Disabilities:

Reasonable accommodations will be provided for students with documented physical, sensory, learning, and psychiatric disabilities. Contact Disability Services to work out the details of accommodations. Please feel free to discuss other special needs with me.

Course Topics

- Basic Statistics
- Straight-Line Regression Analysis – Chapter 5
- Correlation Coefficient – Chapter 6
- Analysis of Variance – Chapter 7
- Multiple Regression Analysis – Chapter 8
- Testing Hypotheses in Multiple Regression – Chapter 9
- Correlations: Multiple, Partial, and Multiple Partial – Chapter 10
- Dummy Variables in Regression – Chapter 12
- Analysis of Covariance and Other Methods for Adjusting Continuous Data – Chapter 13
- Regression Diagnostics – Chapter 14
- Polynomial Regression – Chapter 15
• Selecting the Best Regression Equation – Chapter 16
• One-Way Analysis of Variance – Chapter 17
• Randomized Blocks – Chapter 18
• Two-Way ANOVA with Equal Cell Numbers – Chapter 19
• Two-Way ANOVA with Unequal Cell Numbers – Chapter 20
• The Method of Maximum Likelihood – Chapter 21
• Logistic Regression Analysis – Chapter 22
• Polytomous and Ordinal Regression Analysis – Chapter 23
• Poisson Regression Analysis – Chapter 24
• Analysis of Correlated Data Part 1: The General Linear Mixed Model – Chapter 25
• Analysis of Correlated Data Part 2: Random Effects and Other Issues – Chapter 26

Course organisation:

• Weekly lectures are not intended to be a mere recitation of the text (although we will follow the text rather closely). Instead, they will involve material that augments and supplements the text. To illustrate the important points, we will work through sample problems and discuss, sometimes at great length, practical issues associated with design and data analysis.

• Feel free to ask questions during class; your questions are an important part of this course. Few students are able to master the material without keeping up on a regular basis.

• Working together on homework problems is permitted and encouraged, but each student should write up his/her solutions independently of others. I strongly recommend that you try other problems from the text as well. I think there is much to be learned by doing, or at least reading, as many problems as possible.

• Naturally, cheating on exams is an extremely serious offense and will be dealt with accordingly.

• I welcome you to the class and hope that you have an enjoyable and successful semester!