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**AGSC 137**  
**Agricultural Statistics**  
**Spring 2024**

**Final Examination Study Guide**

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The final exam in AGSC 137 is comprehensive and is scheduled at 8:00 on Wednesday - 6/08, in Marshall 102. The exam will be two parts and you will have up to two hours to complete the test. The first part (to be completed in Blackboard) will involve 65 multiple-choice questions with the same setup as the weekly online quizzes and the two hourly exams (i.e., questions listed in random order with the choices for the multiple-choice questions also listed in random order). Part 2 of the final exam will be problem-based and open book. Students will have up to 65 minutes to complete Part 1 and at least 55 minutes to complete Part 2 of the exam (Part 1 of the final must be completed before Part 2).

In addition to some questions on descriptive statistics, here is a list of inferential statistics topics that will be included on the test:

- Understand the need for probability and its potential application in statistical inference.
- Know how relative frequency can be applied in establishing probabilities.
- Understand the difference among experiment, outcome, and event.
- Have a basic understanding of sets and subsets as well as Venn diagrams.
- Understand the three basic rules of probability.
- Understand the similarities between frequency distributions and probability distributions.
- Understand how to work with the covered discrete and continuous probability distributions.
- Know how to use the binomial, Poisson, and normal probability distributions to solve problems.
- Understand how to transform normally-distributed data to benefit from the standard normal distribution curve.
- Understand the difference between different sampling methods.
- Understand the meaning of the sampling error of the mean and how to calculate it.
- Understand the value and importance of a sampling distribution.
- Know the meaning of the Central Limit theorem and how it is applied in estimating population mean and standard error of the mean.
- Understand the meaning of margin of error.
- Know how to define a confidence interval from a sample for a population with an unknown mean and a known or unknown standard deviation.
- Know how to define a confidence interval for population variance and standard deviation.
- Know how to define a confidence interval for proportions under different sample sizes.
- Understand the difference between the null and alternative hypothesis.
- Know the two general procedures followed in hypothesis testing and that probabilities are used to evaluate statistical significance.
- Know how to conduct a single-sample hypothesis test where the population standard deviation is known.
- Know how to conduct a single-sample hypothesis test where the population standard deviation is unknown.

- Know how to conduct a hypothesis test for two related samples.
- Know how to conduct a hypothesis test for two independent samples.
- Understand the concept of correlation analysis as well as how to calculate, use, and test the significance of the correlation coefficient.
- Know how scatter diagrams can be used to graphically display the correlation between two variables (including how to add a trend line to a scatter diagram in MS Excel).
- Understand the basic concepts of simple and multiple linear regression.
- Understand how to use correlation and regression functions in MS Excel to solve problems.
- Understand how to test the significance of the slope of a simple linear regression line.
- Understand the value of the coefficient of determination in regression analysis.
- Be able to solve a variety of simple problems, both using tables and MS Excel.
- Have a basic understanding of all of the MS Excel functions covered in class.

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