# AGEC 2403. Quantitative Tools for Agribusiness

**Instructor**: **Qiuqiong Huang**

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Office hours (@ 221 Agriculture Building):

- Will notify through emails. Usually Monday and Wednesday afternoons [2-4:30pm], Tuesday and Thursdays mornings [9am-11am] on the weeks a problem set is due.
- Or by Appointment. You can always stop in and ask questions anytime the light is on in my office. If I am busy when you stop by, we will arrange for a mutually convenient time to meet. It is also a good idea to email to schedule appointments.

**TA**: Yefan Nian // ynian@uark.edu
Email TA if there is an error in grading (e.g., points added up incorrectly; you did not get partial credits).

**Lecture hours**: Tuesdays and Thursdays, 3:30 PM - 4:45 PM MHSR0143

**Learning outcomes**: Understand basic statistical terms such as mean and standard deviation; Learn basic statistical analysis skills including data description, hypotheses testing and linear regressions; Correctly interpret statistical results and apply statistics to examine real-world problems.

**Prerequisites**: Principles of Microeconomics (AGEC 1103 or ECON 2023 or ECON 2143); Survey of Calculus (MATH 2043) or Finite Mathematics (MATH 2053).

**Required Textbook**: Lind, D. A., W. G. Marchal, and S. A. Wathen. *Statistical Techniques in Business & Economics*, 16th ed. McGraw-Hill Irwin, 2014

- A copy is on Course Reserve at Mullins Library (2 hour overnight).

Note you could alternatively use the 14th or 15th edition of this textbook. Table of Content of the 16th edition is posted on Blackboard for you to check page numbers of different editions.

*Textbook Learning Resources:*

- Answers to odd-numbered exercises are at the end of the textbook.
- The textbook publisher provides online multiple choice quizzes for each chapter. Your answers will be graded automatically. It is a good way to test your knowledge. Below is the link: http://highered.mheducation.com/sites/0078020522/student_view0/index.html

**Software**: Excel will be used for the class computer exercises. For those of you who do not have a personal computer, you can use computers in the labs on campus or any computer that has Excel. Excel version 10 or above is recommended.

**Blackboard**: Class notes will be posted prior to class; Problem Set answers are posted after due dates; In-class exercises & answers are posted after every class; Exam info and Review note are posted prior to Exam. Because the course is at the 2000 level, an early grade will also be issued. Please check the Grade Center frequently to make sure you got all the points and scores are entered correctly.

**Problem Sets**: In order to post answers promptly on Blackboard and allow the TA to return graded Problem Sets quickly, **LATE PROBLEM SETS WILL NOT BE ACCEPTED IN GENERAL**. If you have some justifiable reasons such as medical reasons (doctor's proof required) **AND WITH MY PERMISSION**, I will allow late Problem Sets up to the time the graded Problem Sets are returned and the score on your late Problem Set will be discounted by 50%. Problem Sets **ARE NOT ACCEPTED** once answers are posted on Blackboard.

**In-Class Exercises**: Each group works on the exercises cooperatively.

- At the end of class, each student turns in a separate answer sheet. Remember to write down your name and group number. Group members are fixed and sit together in the same place for the whole semester. This will reduce the time of forming groups. Group switching is generally not allowed.
- The instructor will walk around the classroom to answer any questions.
- Each in-class exercise is worth 10 points. You get 5 points if you turn it in; the remaining 5 points depend on whether your answer is correct or not. Your total points of all in-class exercises will then be converted to the 13 points to calculate your class grade.
- If you do not attend a class, you get zero for the in-class exercise. If you have some justifiable reasons such as medical reasons (doctor's proof required) **AND WITH MY PERMISSION**, you will be given a make-up in-class exercise later in the semester. If any group member did not come to class, please do not turn in answer sheets for them.

**EXAMs** are closed books. You can bring in a **"cheat sheet"** (one 8.5 x 11 inches sheet of paper, front and back). Students must take the exams at the designated time unless under extreme conditions such as medical reasons (doctor's proof required) **AND WITH MY PERMISSION**. Arrangements will be made for you to take the exam after you have obtained my permission. **IF YOU SKIP ANY EXAM WITHOUT OBTAINING MY PERMISSION BEFOREHAND, YOUR DEFAULT GRADE FOR THE EXAM IS ZERO**.

**Class Project**: Each group analyzes a data set and makes a PowerPoint presentation to report research findings. Class Project Guideline and data sets are posted on Blackboard.

## Grading

### Total points for the class

| | |
|---|---|
| Problem Sets (PS) | 24 |
| In-class Exercises | 13 |
| 3 EXAMs | 15 × 3 |
| Class Project | 18 |
| Total Points | 100 |

- PS 1, 2, 3, 5 are 3 points each.
- PS 4, 6 are 6 points each.
- Please note the TA can deduct your points if your handwriting is not legible.

S is your total points for the class:

| Grade | GPA value | Total points |
|---|---|---|
| A | 4.00 | $S \geq 90$ |
| A- | 3.67 | $87 \leq S < 90$ |
| B+ | 3.33 | $83 \leq S < 87$ |
| B | 3.00 | $80 \leq S < 83$ |
| B- | 2.67 | $77 \leq S < 80$ |
| C+ | 2.33 | $73 \leq S < 77$ |
| C | 2.00 | $70 \leq S < 73$ |
| C- | 1.67 | $67 \leq S < 70$ |
| D+ | 1.33 | $64 \leq S < 67$ |
| D | 1.00 | $62 \leq S < 64$ |
| D- | 0.67 | $60 \leq S < 62$ |
| F | 0.00 | $S < 60$ |

- The class grade calculated as of December 12 is FINAL. No change will be made.
- The Dale Bumpers College of Agricultural, Food and Life Sciences utilizes a plus/minus grading system that assigns numerical values to 12 different grades when grade-point averages are calculated.

**Tentative Schedule and Due Dates**

| Dates | | Due Dates | Topic | Textbook chapter |
|---|---|---|---|---|
| T | Aug 22 | | Introduction | Chap 1 |
| Th | Aug 24 | | Describe Frequency of Data using Tables and Charts (PS 1) | Chap 2 |
| T | Aug 29 | | Describe Frequency of Data using Tables and Charts (PS 1) | Chap 2 |
| Th | Aug 31 | **PS 1** | Describe Central Tendency and Dispersion of Data (PS 2) | Chap 3 |
| T | Sep 5 | | Describe Central Tendency and Dispersion of Data (PS 2) | Chap 3 |
| Th | Sep 7 | | Describe Relative Position of Data (Percentiles) (PS 2) | Chap 4 |
| T | Sep 12 | **PS 2** | Review for EXAM 1 | |
| Th | Sep 14 | | Basics of Probability; Discrete Probability Distributions (PS 3) | Chaps 5& 6 |
| T | Sep 19 | **EXAM 1** (Covers Chapters 2 – 4) | | |
| Th | Sep 21 | | Discrete Probability Distributions (PS 3) | Chap 6 |
| T | Sep 26 | **PS 3** | Continuous Probability Distributions (PS 4) | Chap 7 |
| Th | Sep 28 | | Continuous Probability Distributions (PS 4) | Chap 7 |
| T | Oct 3 | | Continuous Probability Distributions (PS 4) | Chap 7 |
| Th | Oct 5 | | Sampling Distribution; Central Limit Theorem (PS 4) | Chap 8 |
| T | Oct 10 | | Estimation and Confidence Intervals (PS 4) | Chap 9 |
| Th | Oct 12 | **PS 4** | Review for EXAM 2 | |
| T | Oct 17 | Fall Break | | |
| Th | Oct 19 | **EXAM 2** (Covers Chapters 5 – 9) | | |
| T | Oct 24 | | One-Sample Tests of Hypothesis (PS 5) | Chap 10 |
| Th | Oct 26 | | One-Sample Tests of Hypothesis (PS 5) | Chap 10 |
| T | Oct 31 | | One-Sample Tests of Hypothesis (PS 5) | Chap 10 |
| Th | Nov 2 | **PS 5** | Correlation and Linear Regression (PS 6) | Chap 13 |
| T | Nov 7 | | Correlation and Linear Regression (PS 6) | Chap 13 |
| Th | Nov 9 | | Multiple Regression Analysis (PS 6) | Chap 14 |
| T | Nov 14 | | Multiple Regression Analysis (PS 6) | Chap 14 |
| Th | Nov 16 | | Multiple Regression Analysis (PS 6)<br>Class Project Guideline | Chap 14 |
| T | Nov 21 | **PS 6** | Review for EXAM 3<br>Deadline to choose data set and presentation date for class project | |
| Th | Nov 23 | Thanksgiving | Holiday | |
| T | Nov 28 | **EXAM 3** (Covers Chapters 10, 13,14) | | |
| Th | Nov 30 | | Class Project Lab Session | |
| T | Dec 5 | | Class Project Presentation | |
| Th | Dec 7 | | Class Project Presentation | |
| T | Dec 12 | 3-5PM | Class Project Presentation | |
| T | Dec 12 | 11:59PM | Email *Class Project Peer Review Form* to ynian@uark.edu | |

PS is short for Problem Set. Please hand in your Problem Sets to the instructor **before class** on due dates.
Coverage of each lecture and Due dates may vary depending on the progress of the class.

Textbook Readings you can **SKIP**

| | |
|---|---|
| Chap 1 | Levels of Measurement |
| Chap 3 | The Weighted Mean;<br>The Geometric Mean;<br>The Mean and Standard Deviation of Grouped Data |
| Chap 4 | Dot Plots;<br>Stem-and-Leaf Display;<br>Sknewness;<br>Relationship between Two Variables;<br>Contingency Tables |
| Chap 5 | Rules of Addition for Computing Probabilities<br>Rules of Multiplication to Calculate Probability<br>Contingency Tables<br>Bayes' Theorem<br>Principles of Counting |
| Chap 6 | Hypergeometric Probability Distribution<br>Poisson Probability Distribution |
| Chap 7 | The Normal Approximation to the Binomial<br>The Family of Exponential Distributions |
| Chap 8 | Sampling methods |
| Chap 9 | Sections on pages 297-306 |
| Chap 10 | Type II Error |
| Chap 13 | Interval estimates of Prediction |
| Chap 14 | Sections on pages 494-507 |

**Classroom Rules**

- If you are late, please come in quietly (but do not skip any class even if you are late). You should remain in the classroom until the instructor indicates the class is over. If you have a particular reason to leave early, you should ask for the instructor's permission first before class begins.
- During classes, please turn off any devices such as laptop, tablet, iPad or phones. No chatting is allowed, especially when I am speaking.
- Questions relevant to classes are more than welcome. We will have plenty of time for discussions and practices in class.
- Academic Integrity—Academic Honesty. "As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University's 'Academic Integrity Policy' at honesty.uark.edu. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor." Any scholastic dishonesty of yours will result in points taken off your Problem Sets or exams or even an F for the class grade. If you are caught cheating, campus procedures will be followed to exact the appropriate punishment.

**To do well in the class:**

- Attend every class.
- Read the textbook chapter before class.
- Read the class notes posted on the class Blackboard site before class.
- Ask questions in class. Remember the "No question is stupid" rule.
- Work on problem sets and turn them in on time.
- Visit office hours whenever you have questions.
- Communicate with the instructor about any difficulties you encounter or any suggestions you have to help you learn better.

**Emergency Preparedness**— The University of Arkansas is prepared for a wide range of emergencies. Detailed information and contact numbers: http://emergency.uark.edu/

**Inclement Weather—** We will follow the campus's inclement weather policy (link below). If campus is closed, no lecture will be given. No assignment would be graded down in such a case and an exam would be re-scheduled. During inclement weather the instructor will try to communicate with students via e-mail. http://emergency.uark.edu/

**RazALERT—** The University of Arkansas has a campus-wide alert system for any hazardous conditions that may arise on campus. To learn more and to sign up: http://safety.uark.edu/emergency-preparedness/emergency-notification-system/student-sign-up.php

**Academic Support—** A complete list and brief description of academic support programs can be found on the University's Academic Support site, along with links to the specific services, hours, and locations. The instructor can assist you with finding and using the support services that will help you be successful. http://www.uark.edu/academics/academic-support.php

**Learning Disabilities—** Students with learning disabilities will be accommodated in accordance with campus policies. Students with such disabilities should contact the instructor early in the semester so that the means of accommodation can be arranged.