

AGEC 5403
Quantitative Methods For Agribusiness
Fall 2019

Instructor: Dr. Lawton Lanier Nalley
AGRI 225
(479)575-6818
lnalley@uark.edu

Office Hours: Tuesday & Thursday 1:00 p.m. - 3:00 p.m. AGRI 225
I have an open door policy and welcome any questions that you may have. While my official office hours are listed above I am in my office most of the time and encourage you to stop by and ask questions.

Prerequisites: Graduate Standing

Course Objectives: Primary Objective. The primary objective of the course is to provide students with knowledge of, and hands-on exposure to, the major tools used by applied economists, business consultants, and researchers in analyzing data related to the management of agricultural businesses, farm firms, and large corporations as well as researching policy issues in the public sector. These tools include:

- 1) Regression analysis
- 2) Mathematical (linear) programming
- 3) Stochastic simulation modeling (risk analysis)
- 4) Simulated Optimization

The course is application-oriented and operates under the premise that an understanding of when and how to use quantitative tools is enhanced by solving and analyzing example problems with the aid of commonly available decision tools. Although the course is taught from an applied perspective, a portion of the classroom materials is targeted at providing students with the conceptual basis which links the use of these tools to economic theory. In part, the evolution of the course was dictated by the changing needs of the soon-to-be-employed graduate students who have enrolled in the course. An applied discipline like agricultural economics bears a responsibility of providing its graduates with marketable skills. As economic and business systems become increasingly complex, they require solutions to problems which are only analyzed with increasingly sophisticated quantitative techniques, which are, in turn, employed by increasingly better trained analysts and managers. Thus, the targeted output of the course is better trained students who will become the analysts and managers of tomorrow.

Major quantitative tools studied. The broad objective of the course is to provide an understanding of how basic economic theory can be applied to do problem solving research. To this end, the course is divided into three major sections,

corresponding to three quantitative techniques:

(1) Estimation of linear regression models using Ordinary Least Squares (OLS) techniques. The linkage between raw empirical data and economic analysis is drawn by using linear regression to statistically estimate and economically interpret economic and business relationships.

(2) Optimization using mathematical programming. Linear programming problems are solved using the simplex algorithm to demonstrate how the theory of marginal analysis is effectively practiced when problems become too large or complex to solve using calculus.

(3) Risk and uncertainty. Students are introduced to stochastic Monte Carlo simulation and other alternative approaches researchers use (E-V analysis, decision theory, stochastic dominance) when the perfect knowledge assumption of the neo-classical model no longer holds.

Exposure to these and other topics will not only help students to read the literature, understand research findings, and interpret consultant reports, but more importantly, will teach them how to go about analyzing, solving, and comprehending current problems in agricultural and business economics.

Course Evaluation:

Homework	50%
<u>Projects</u>	<u>50%</u>
	100%

Grades will be assigned as follows:

A: > 92%	C: 73 - 75 %
A-: 88 - 91 %	C-: 70 - 72 %
B+: 85 - 87 %	D+: 67 - 69 %
B: 82 - 84 %	D: 64 - 66 %
B-: 79 - 81 %	D-: 60 - 63 %
C+: 76 - 78 %	F: < 60 %

Homework:

Given the fact this class is empirically based the majority of the earned grade will come from analyzing and synthesizing datasets.

Conditions regarding late work: Late work will be penalized 25% per day and will not be accepted after the beginning of the next class period on which they were due.

Projects:

There will be multiple projects throughout the semester dealing with each of the quantitative tools covered in this course which will require students to (1) develop and synthesize a problem of their choosing (2) find data to analyze said problem and (3) develop a written synopsis of the problem. There are no set guidelines of what a project should mirror, that is up to the student with the notion they are being graded against their peers. Thus, hard work and professionalism pay off. Projects are intended to replace exams in that students are required to take the knowledge they have learned on a topic and apply it to real world situations. Unlike exams where there is typically a right or wrong answer these projects are designed to analyze: (1) the students skill set using quantitative tools (2) the students knowledge on how to apply those tools in real world situations and (3) the students ability to transfer the somewhat obtuse notion of quantitative economics into a professional report.

Inclement Weather: If the University is open we will have class. Please use your best judgement before getting on the road.

ACADEMIC DISHONESTY

The University of Arkansas, Fayetteville, presents this policy as part of its effort to maintain the integrity of its academic processes. Academic honesty should be a concern of the entire university community, and a commitment to it must involve students, faculty members, and University administrators.

Students must understand what academic integrity is and what the most common violations are. With that understanding they must commit themselves to the highest standards for their own, as well as for their peers', academic behavior.

Public support and encouragement of the faculty is a second critical component necessary to strengthen academic integrity on campus. Faculty members must be continually vigilant in the management of their classes, their assignments, and their tests. To see the entire policy text and provisions, please visit the web site at <http://advancement.uark.edu/catalogofstudies/03-04/html/academicregs.html#02>

STUDENTS WITH DISABILITIES

The Center for Students with Disabilities (CSD), located in 104 Arkansas Union, serves as the central campus resource for students with disabilities. Working in partnership with students, faculty, and staff, the goal of the CSD is to ensure a physically and educationally accessible university environment. CSD staff work individually with students and assists academic and non-academic units to determine reasonable accommodations that will enable every student to have access to the full range of programs, services, and activities offered through the University. For more information contact the CSD at:

Center for Students with Disabilities
University of Arkansas
104 ARKU
Fayetteville, AR 72701,
479-575-3104 (Voice) or 479-575-3646 (TTY)
479-575-7445 (Fax)

EMERGENCY PROCEDURES

Many types of emergencies can occur on campus; instructions for specific emergencies such as severe weather, active shooter, or fire can be found at emergency.uark.edu.

Severe Weather (Tornado Warning):

- Follow the directions of the instructor or emergency personnel
- Seek shelter in the basement or interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building
- Stay in the center of the room, away from exterior walls, windows, and doors

Violence / Active Shooter (CADD):

- **CALL-** 9-1-1
- **AVOID-** If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY-** Barricade the door with desk, chairs, bookcases or any items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it's safe.
- **DEFEND-** Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.