AGEC 305
AGRICULTURAL PRICES
(3 Credit Hours)
Fall 2008

COURSE SYLLABUS

Instructor: Professor Matt Holt
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Phone: Office: 494-7709
E-Mail: mholt@purdue.edu

Class Time: MW (and some Friday’s), 12:30 -- 1:20 a.m. in Smith Hall (SMTH), room 118, and on most Friday’s, 12:30 -- 1:20 a.m. in Krannert 756 (Lab 1)

Office Hours: Typically Monday and Wednesday 1:30 to 2:30 p.m., or by appointment.

Prerequisites: You should have successfully completed one of AGEC 220 (Marketing Farm Products), ECON 251 (Microeconomics), and STAT 305 (Introduction to Statistics) or equivalent. If you fail to meet one or more of these prerequisites please notify me immediately. It is also assumed that you have successfully completed one of MA 220, 224, or the equivalent. We will likely utilize several basic calculus concepts during the semester. We will also use Excel spreadsheets for plotting data, deriving simple statistical summary measures, linear regression analysis, and forecasting.

Required Textbooks:


Overview, Objectives, and Policy:

Having a basic understanding of how to analyze data and how to construct a simple yet reasonable forecast of future events is often an essential ingredient in farm and business planning and management. Indeed, quantitative forecasting is used widely in business and government to help managers, planners, and policy makers make critical decisions regarding sales, production management, inventory management, risk management, current and future personnel needs, and so forth. As a simple example, you may be considering an expansion of your farm that would involve buying or renting more land. What do you expect the future prices of, for example, corn, soybeans, and wheat (hogs?) to be, and how might these affect the future profitability of your farming enterprise? Your answers to this question will in turn dictate how much you might be willing to pay to acquire more land. As well, governmental bodies all the way from local county, city, and town councils to state and federal governments have a need to forecast and anticipate likely future conditions. Again to illustrate, one of the most important projections any state government needs in forming a budget (and the budget, in turn, will impact tuition at state supported colleges and universities) is expected tax revenue, including revenue from sales, income, and property taxes. The first two will vary with the overall state of the economy and are therefore harder to predict.
Overview, Objectives, and Policy (continued):

Considering the above, the primary goal of this class is to have you learn how to summarize, analyze, and forecast agricultural and commodity prices and agricultural supply/demand relationships. As such, we will make extensive use of a number of data management and analysis features of Microsoft Excel including simple data manipulation and plotting; obtaining and reporting simple descriptive statistics (i.e., mean, variance, covariance, correlation, etc.); and obtaining, interpreting, and reporting the results of simple and multiple linear regression models. Some of the topics that will likely be covered include but are not limited to: a review of basic statistics including confidence intervals and hypothesis testing (normal, student’s t, and F distributions) and autocorrelation functions; deflating by general price indices (why we do it, how general price indices are constructed); characterizing and explaining price and quantity movements by using linear and polynomial trend models; explaining seasonal data patterns; a review of the basic supply-demand framework and estimating and interpreting commodity demand and/or supply equations; forecasting including with moving averages, with exponential smoothing models, with multiple regression models, with simple autoregressive models, and by combining forecasts; and assessing forecast performance. If time permits we will also show how forecasting models may be used for commodity price hedging.

At the risk of being redundant, this course will make extensive use of various statistical methods and tools. Many of these you have already been exposed to in STAT 305 or equivalent. We will review basic statistical concepts as we go, but if you are not prepared for or do not otherwise care about conducting a reasonably rigorous statistical analysis of agricultural and commodity price data, then this course is likely not for you! While this course alone will not render you an expert in agricultural and commodity price and market analysis/forecasting, it will provide you with a deeper understanding of and appreciation for the tools currently used by many market analysts in business and in government.

This year the course will typically consist of two components: two days of lecture (Mon. and Wed. in 118 Smith Hall) and one day in the lab (Krannert 756, or Lab 1). During lectures I will present materials using Power Point. As I complete sections of material I will post the appropriate slides on the course webpage. As well, during lecture I will cover both concepts and examples relevant to price analysis and economic and business forecasting. In the lab you will frequently be given assignments that you will work on during this period. I may also use the lab session to introduce and work through extensive examples pertaining to material covered in lecture. Again, assignments will require that you be familiar with a number of basic functions in Microsoft Excel, some of which (but perhaps not all) will be reviewed in lab and/or lecture.

Attendance Policy:

This is a 300-level class, and therefore it is not mandatory that attendance be taken. Even so, regular attendance at lectures is strongly encouraged! I also encourage you to participate in in-class discussions and to ask (relevant) questions. Studies show that grade performance in any collegiate-level course is highly correlated with attendance and participation. As extra incentive, regular attendance and participation in class discussions may allow you to drop your lowest midterm score in final grade calculations.
Grading and Grade Policy:

Your final course grade will be determined as follows. There will be three midterm exams given during the semester each of which will count for 15% of your grade. There will also be a comprehensive final exam that will count for 30% of your final grade. The remaining 25% will be based on (near weekly) regularly assigned problem sets. Finally, if you have no more than three unexcused absences during the course of the semester when calculating your final grade I will re-weight your midterms so that your lowest midterm score receives a weight of zero—the two remaining midterms will equally receive the entire weight for midterm exams (45%). Note: Unexcused absences do not apply to exam dates.

The tentative dates for the exams, as well as a breakdown of the final grade components, are:

<table>
<thead>
<tr>
<th>Exam Description</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>In-Class Midterm Exam I (Fri., Sep. 26th)*</td>
<td>15%</td>
</tr>
<tr>
<td>In-Class Midterm Exam II (Fri., Oct. 31st)*</td>
<td>15%</td>
</tr>
<tr>
<td>In-Class Midterm Exam III (Fri., Dec 5th)*</td>
<td>15%</td>
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<tr>
<td>Final Exam (To be scheduled during finals week)</td>
<td>30%</td>
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<tr>
<td>Homework Assignments</td>
<td>25%</td>
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</tbody>
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* Note: The dates for the midterm exams are, as suggested, somewhat tentative and may deviate due to the needs of the instructor and/or the class.

Any missed exam must be accompanied with a verifiable written excuse complete with appropriate contact information of the person issuing the excuse (i.e., name, phone number, etc.). Makeup exams and/or early exams are generally not given; instead, my usual policy is to appropriately re-weight the remaining exams and the final exam. Finally, if you do miss an exam due to an excused absence the “dropping the lowest test score” attendance incentive will no longer apply. Unless otherwise stated, homework assignments will generally be due in class on the assigned date—late assignments will not be accepted. Again, if warranted special circumstances arise so that it is not possible for you to turn in your homework when due, then your remaining homework scores will be adjusted accordingly by the weight of the homework that was missed. If you feel that you were not fairly graded on a particular homework assignment or an exam, you have until the subsequent class period after the homework/exam is returned to submit to the instructor a typed request for a re-grade, carefully detailing the reasons why you think you did not receive appropriate credit. Requesting a re-grade in no way assures you of receiving additional points. Finally, I typically do not give extra credit assignments.

The scale used in determining your final grade this year will be:

<table>
<thead>
<tr>
<th>Grade</th>
<th>GPA Value</th>
<th>Range</th>
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<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>97-100</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td>93.0 – 96.9</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
<td>90.0 - 92.9</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
<td>87.0 - 89.9</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>83.0 - 86.9</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td>80.0 - 82.9</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
<td>77.0 - 79.9</td>
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<tr>
<td>C</td>
<td>2.0</td>
<td>73.0 – 76.9</td>
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<tr>
<td>C-</td>
<td>1.7</td>
<td>70.0 – 72.9</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
<td>67.0 – 69.9</td>
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<tr>
<td>D</td>
<td>1.0</td>
<td>63.0 – 66.9</td>
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<tr>
<td>D-</td>
<td>0.7</td>
<td>60.0 – 62.9</td>
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<tr>
<td>F</td>
<td>0.0</td>
<td>&lt; 60.0</td>
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Academic Integrity:

In general you may collaborate on homework assignments, although each student must turn in her/his own original answer sheets. Even though joint work is not discouraged, I caution you against depending on each other too heavily with respect to homework assignments since independent work on assignments is an excellent way to prepare for exams. Also, when turning in homework assignments, exams, etc. I ask that you legibly print your name.

Regarding exams and other in-class exercises, University policy on academic misconduct is clear: academic dishonesty in any form is strictly prohibited. Instances of academic dishonesty will be referred to the Dean of Students for disciplinary action. Penalties are severe and may include failure on the exam, quiz, paper, or project, failure in the course, and/or expulsion from the University. The risks associated with academic dishonesty far outweigh the perceived benefits. Academic dishonesty includes citing someone else's work as your own, using unauthorized “crib sheets” during exams, or sharing your answers with someone else. Most notably, exams are not to be treated as “group discussions,” and any individual or individuals suspected of doing so will be dealt with in a manner consistent with University policy and guidelines. Please see:

http://www.purdue.edu/ODOS/osrr/integrity.htm

for additional information. You can report a cheating incident by going to this web site and filling out a form.

Lastly, if you have questions about the material being covered, your performance in the course or related concerns, please meet with me during office hours or arrange an appointment. Do not wait until the end of the semester to do so if a problem arises.

Students with Disabilities:

If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. Please note that University policy requires all students with disabilities to be registered with Adaptive Programs in the Office of the Dean of Students (http://www.purdue.edu/ODOS/adpro/Welcome.html) before classroom and/or additional accommodations can be provided.

Subject to Change Statement:

Information provided in this syllabus, other than the grading and attendance policies, may be subject to change with advance notice, as deemed appropriate by the instructor.

Important Dates:

Monday, September 1st  Labor Day—No Class
Monday, September 8th  Last Day to drop the course without appearing on your record
Monday, September 22nd  Last Day to drop the course without a grade
Friday, September 26th  First Midterm (tentative date)
Important Dates (continued):

Tuesday, October 13th-14th   Fall Break—No Class
Friday, October 31st        Second Midterm (tentative date)
Wednesday, November 26th   Thanksgiving break—No Class
Friday, December 5th        Third Midterm (tentative date)
Friday, December 12th      Last day of class

AGEC 305 BASIC COURSE OUTLINE

I. Review of Supply and Demand (Class notes and slides)

   Real versus nominal prices; the Law of Demand and the Law of Supply; supply and demand shifters; market equilibrium and the algebra of equilibrium; supply and demand elasticities; elasticities and forecasting; price indices; examples and applications.

II. Statistics Review (Wilson and Keating, Chapter 2)

   Basic summary statistics (means, variances, covariance, correlation); the normal distribution; the Student’s t-distribution; confidence intervals; hypothesis testing; naïve forecasts and forecast evaluation measures; examples and applications in Microsoft Excel ©

First Exam somewhere about here

III. Introduction to Regression Analysis—Simple and Polynomial Trends (Wilson and Keating, Chapter 1, pp. 31-33; Chapter 4, pp. 157-179; and Chapter 5, pp. 217-231 and pp. 250-252.)

   Introduction to trend analysis with the simple linear regression model; review of basic regression techniques; simple trend analysis; measures of fit and performance (ANOVA); polynomial trend models and multiple regression; forecasting with trend models; examples and applications in Microsoft Excel ©

IV. Analysis of Seasonal Data and Construction/Use of Seasonal Indices (Wilson and Keating, Chapter 5, pp. 240-250)

   Dummy variables and seasonal terms in the multiple linear regression model; constructing seasonal indices; converting annual forecasts into seasonal forecasts by using seasonal indices; modeling changing seasonal patterns over time; examples and applications in Microsoft Excel ©

Second Exam somewhere about here
V. Commodity Supply and Demand Estimation (Class notes, slides, and other handouts)

Analysis and estimation of agricultural commodity supply and/or demand relationships in a multiple regression framework; model specification issues; incorporating seasonal and trend terms in supply/demand models; model evaluation and interpretation; examples and applications in Microsoft Excel ©

VI. Introduction to Forecasting and Basic Forecasting Models (Wilson and Keating, Chapter 3, pp. 99-121; Chapter 7, pp. 341-344; Chapter 8)

Reasons for forecasting; simple forecasting models including moving averages and exponential smoothing; forecasting with supply/demand equations; measures of forecast error/bias; introduction to simple time series models and market/price dynamics; forecasting with simple time series models; practical composite forecasting techniques; examples and applications in Microsoft Excel ©

Third Exam somewhere about here

VII. Forecasting, Hedging, and Risk Management (Class notes, slides, and other handouts)

A risk minimizing storage hedge and hedge ratios; relationship between futures and spot prices (i.e., basis risk); forecasting future variances and covariances for purposes of making real-time adjustments in hedge ratios; examples and applications in Microsoft Excel ©

Final Exam somewhere about here