

**AGEC 305**

**AGRICULTURAL PRICES**

**(3 Credit Hours)**

**Spring 2016**

**COURSE SYLLABUS**

Instructors: Professor Ken Foster and Yuhang Liu

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**Class Time:** MW, 1:30 -- 2:20 p.m. in Krannert (KRAN) room G2, and on Fridays, 12:30 -- 1:20 p.m. or 1:30 -- 2:20 p.m. Nelson Hall of Food Science Room 1225.

**Office Hours:**

Dr. Foster: Typically Monday and Wednesday 12:30 a.m. to 1:20 p.m.

Ms. Liu: Tuesday 10:30 a.m. to 12:30 p.m. and by appointment

**Prerequisites:** You should have successfully completed one of AGEC 220 (Marketing Farm Products), ECON 251 (Microeconomics), and STAT 301 (Introduction to Statistics) or equivalent. If you fail to meet one or more of these prerequisites please notify me immediately or drop the course. It is also assumed that you have successfully completed one of MA 220, 224, or the equivalent. We will utilize 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.

**Textbook:**

Hudson, Darren, *Agricultural Markets and Prices*, Blackwell Publishing, Malden, MA. 2007.

**Course Philosophy and Objectives:**

This course will provide students an opportunity to achieve a thorough understanding of the economic principles that determine prices in markets. The course is designed to provide knowledge of markets and the entities and factors that impact market equilibrium outcomes. Principles of microeconomic theory will allow students to formulate informed decisions in the context of being market participants as decision makers in production and demand markets. The microeconomic theoretical background will provide future decision makers in a broad range of industries and specializations the ability to understand market outcomes and use the understanding to make informed decisions.

Stylized facts specific to agricultural markets will provide context with regard to the definition of markets, determination of the factors that influence supply and demand decisions, and third party impacts on market outcomes. These stylized facts will be presented within a general framework that provides students the opportunity to contrast the agricultural market with the entities and factors that influence markets for industries with varying structure.

Measurement of economic relationships using data will be emphasized. The provision of an appropriate mix of economic principles and empirical estimation tools provide the opportunity for future decision makers to formulate microeconomic theoretical based expectations and accurately measure market outcomes as realized over time.

Lectures on Mondays and Wednesdays will typically focus on theoretical concepts and their value for decision making in practical settings. Friday labs will focus around building analytical skills necessary to quantify the economic concepts from lecture and complete associated homework assignments. These assignments will be completed in *Microsoft Excel* @. Students are expected to be familiar with basic functions in *Excel* so that lab time can focus on more advanced functions necessary to complete the assignments. Student who are not interested in or open to rigorous exploration of economic theory and computational analysis will probably not enjoy or appreciate this course.

#### **Attendance Policy:**

Attendance will be taken in this course. Research has demonstrated that regular attendance and participation in class discussion increases final grades significantly. A seating chart will be developed for lecture and a sign-up sheet will be available at the labs. This is an advanced economics course and attendance provides students with an opportunity to practice the theory of choice in deciding whether or not to attend. Students face a classic choice between attendance/higher grades and other activities/lower grades and should carefully weigh the costs and benefits realizing that some benefits and costs may occur in the future. Attendance on exam dates is required and make up exams will only be given in extreme cases. In such cases, students should contact the instructor as soon as possible and preferably before the examination time. In general, a missed exam will become your dropped exam score. Attendance will be worth a fraction of your grade. To obtain those points you must occasionally participate meaningfully in class and miss no more than 5 class periods (labs and lectures) during semester not including exam dates.

#### **Grading and Grade Policy:**

Your final course grade will be determined as follows. There will be three in-class midterm exams given during the semester. Your lowest midterm exam will be dropped from consideration in computing your final grade and the remaining two exams will each count for 25% of your grade. There will also be a comprehensive final exam that will count for 25% of your final grade. You may choose to forego the final exam and accept the grade you have received to that point in the semester. However, if you choose this option then you will not be allowed to drop a midterm exam score. The remaining 25% of your grade will be split between problem sets and attendance. Approximately 8 problem sets will be assigned in Friday labs and will be due the following Wednesday. These will worth a combined 20% of your grade.

The remaining 5% of your grade will be based on attendance and class participation. In computing final grades, the lowest problem set grade will be dropped.

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

Letter Grade	GPA Index	Class Point Percentage Range
A+	4	97 – 100
A	4	93 – 96.9
A-	3.7	90 – 92.9
B+	3.3	87 – 89.9
B	3	83 – 86.9
B-	2.7	80 – 82.9
C+	2.3	77 – 79.9
C	2	73 – 76.9
C-	1.7	70 – 72.9
D+	1.3	67 – 69.9
D	1	63 – 66.9
D-	0.7	60 – 62.9
F	0	Less than 60

**The tentative dates for the exams are:**

In-Class Midterm Exam I (Monday Feb. 8th)

In-Class Midterm Exam II (Monday Mar. 7th)

In-Class Midterm Exam III (Monday Apr. 11th)

Final Exam (To be scheduled during finals week)

Homework Assignments are due in class on the next Wednesday following their assignment unless otherwise announced.

Note: The dates for the midterm exams are, as suggested, 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 use a missed exam as the dropped examination as mentioned above.

If special circumstances arise so that it is not possible for you to turn in your homework when due, then this would become your dropped homework on the first case. Any homework turned in after the deadline will be graded as follows. Points for wrong answers will be deducted from the lowest score obtained among the students who turned their homework in on time. That is, a late homework score can be no higher than the lowest homework score received among those who met the deadline. 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. In fact, when a re-grade is granted the entire assignment will be re-graded and the final score could be lower than that attained initially. Any efforts to change a paper between the time it is returned and a re-grade occurs will be considered a violation of the Purdue University's academic honor code and will result in a failing grade for the course. Finally, I believe that my grading policy is generous and thus I do not give extra credit assignments.

### **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. Penalties are severe, determined by the instructors, and may include failure on the exam, quiz, paper, or project, and failure in the course. Instances of academic dishonesty will be referred to the Dean of Students for additional disciplinary action. The risks associated with academic dishonesty far outweigh the perceived benefits. Academic dishonesty includes passing off someone else's work as your own, using unauthorized "crib sheets" during exams, or sharing your answers with someone else during exams. 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/purdue/about/integrity\\_statement.html](http://www.purdue.edu/purdue/about/integrity_statement.html) for additional information. Lastly, if you have questions about the material being covered, your performance in the course or related concerns, please meet with one of the instructors 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 one of the instructors 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 students with disabilities to register with Disability Resource Center (<https://www.purdue.edu/studentsuccess/specialized/drc/students/getConnected/contentConnected.html>) before classroom and/or additional accommodations can be provided and to contact the instructor about these accommodations.

### **Course and Instructor Evaluations**

Both of the instructors greatly value the feedback of students to help improve their teaching and the quality of this course. Online evaluation responses are typically very low at Purdue (< 60% response rate). We will not award any extra credit points for completing the evaluations. However, if more than 90% of the class completes their evaluations then Dr. Foster will sing for the class during the final week of classes.

### **Subject to Change Statement:**

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

### **Important Dates:**

Monday, January 18th MLK Day —No Class

Monday, January 25th Last Day to drop the course without it appearing on your record

Monday, February 8th Last Day to drop the course without a grade (only W appears on your record)

Monday, March 11th Last Day to drop the course with either W or WF appearing on your record

Monday, February 8th First Midterm (tentative date)

Monday, March 7th Second Midterm (tentative date)

March 14 – 18th Spring Break—No Class – YEAH!

Monday, April 11th Third Midterm (tentative date)

Friday, April 29th – Last day of class

Monday May 2th – Saturday May 7<sup>th</sup> is Final Exams Week

### **AGEC 305 BASIC COURSE OUTLINE**

This course will consist of five core sections.

## **I. Review of Markets and Prices (Class Notes; Hudson *Introduction* and *Chapter 3*)**

*Learning Objectives:*

1. *Students will be able to explain the roles of prices in a market economy*
2. *Students will be able to use the concept of equilibrium to describe and compute how a price and quantity pair evolves in a stylized market model*
3. *Students will be able to recite and use the factors that shift supply and demand curves to descriptively analyze price data when presented with data and/or graphs of price data*
4. *Students will be able to manipulate data to form an index as well as manipulate the base period of the index*
5. *Students will be able to manipulate data to aggregate prices and quantities across a set of related goods or services*
6. *Students will be able to compare price indexes over time, extract useful decision information, and draw inferences about prices from the same*
7. *Students will be able compute and interpret relative prices or price ratios*
8. *Students will be able to describe a perfectly competitive market and the process of price determination*
9. *Students will be able to describe basic price determination and equilibrium in an imperfectly competitive market*
10. *Students will be able to algebraically manipulate supply and demand functions*
11. *Students will be able to explain under what circumstances inverse demand or inverse supply functions are appropriate for use*
12. *Students will be able to distinguish between the structure, conduct and performance of a market*
13. *Students will be able to identify and define nominal and real prices, deflators, and explain when each is appropriate for use*
14. *Students will be able to apply the abstract concepts underlying all of the above and relate them to public and private decision analysis*

## **II. Underlying Behavioral Models in Economics and the role of Prices (Class Notes; Hudson *Chapters 2, 4, and 5*)**

### **a. Utilizing the Laws of Supply and Demand**

*Learning Objectives:*

1. *Students will be able to describe the concept of elasticity in abstract terms*
2. *Students will be able to compute and interpret elasticities given appropriate data*
3. *Students will be able to use elasticities to make informed public and private decisions*
4. *Students will understand the concept of substitution and complementarity*
5. *Given a stylized examples students will be able to assess the likely degree of substitution between two goods, inputs, services, or products*

**<First Midterm About Here>**

**b. Optimization by economic agents using mathematical models**

*Learning Objectives:*

1. *Students will be able to interpret and describe the competitive consequences of profit maximization in markets using graphs and the Lerner Index.*
2. *Students will be able to write down the Lerner Index for both output and input markets, define it using words, and depict the markup or markdown in prices graphically.*
3. *Students will be able to use the Structure, Conduct, Performance paradigm to describe the competitive forces in a market place and to describe how firm, market, and exogenous force interact to change the degree of competition in a market.*
4. *Students will be able to relate elements of the Structure, Conduct, and Performance paradigm to the Lerner Index.*
5. *Students will be able to explain how elasticity and flexibility of demand equations affects an imperfectly competitive firm's ability to sell output at a price above marginal cost.*
6. *Students will be able to explain how elasticity and flexibility of supply equations affects an imperfectly competitive firm's ability to purchase inputs at below the marginal revenue product for that input.*
7. *Given an inverse demand equation and marginal cost, students will be able to formulate industry total revenue, derive marginal revenue, find the profit maximizing industry output and price. Students will also be able to compare this price and quantity pair to the perfectly competitive output level and price.*

**c. The Marketing Channel**

*Learning Objectives:*

1. *Students will be able to formulate and estimate models for marketing margins between different levels of the market channel.*
2. *Students will be able to relate marketing margins to supply and demand functions at different levels of the marketing channel.*
3. *Students will be able to use information from marketing margins in public and private decisions*
4. *Students will be able to graphically represent a marketing margin and describe how it changes in response to underlying variables such as new products, changes in costs, and government policy, etc.*
5. *Students will be able to formulate a discussion and correctly justify a change in the marketing margin when there is an introduction of new technology or product quality changes introduced along the marketing channel.*

**d. Stylized facts of agricultural markets**

*Learning Objectives:*

1. *Students will understand the role of biology in agricultural supply and demand*
2. *Students will be able to incorporate storage in demand and supply*
3. *Students will be able to determine the impacts of inelastic demand for food staples on agricultural market equilibrium outcomes*

**e. Estimation**

*Learning Objectives:*

1. *Given data, students will be able to use regression analysis to estimate demand and supply functions as well as marketing margins*
2. *Students will be able to formulate the models above given a stylized example*
3. *Students will be able to properly interpret results from estimated models*

**<Second Midterm About Here>**

**III. Forecasting and Pure Price Analysis (Class Notes; Hudson Chapter 7)**

*Learning Objectives:*

1. *Students will be able to examine data to recognize patterns*
2. *Students will be able to detrend, deseasonalize, and decycle data*
3. *Students will understand the difference between stochastic and deterministic trends and how to detrend each*
4. *Students will understand equilibrium in the context of a time dimensional model and the role of a time arbitrage*
5. *Students will recognize disequilibrium in forecasting models and how it can be used for decision making*
6. *Students will be able to formulate and estimate simple models for forecasting prices*

**<Third Midterm About Here>**

**IV. Demand for Non-market Goods (Class Notes; Hudson Chapter 8)**

*Learning Objectives:*

1. *Students will be able to recognize non-market goods , given examples of both market and non-market goods*
2. *Students will be able to describe the hedonic model and associate logical framework*
3. *Students will understand the underlying utility theory behind hedonic models*
4. *Students will be able to formulate and estimate hedonic pricing models*
5. *Students will be able to derive implicit prices for non-market goods and interpret them appropriately.*



## V. Spatial Analysis of Prices (Class Notes; Hudson Chapter 6)

### *Learning Objectives:*

1. *Students will be able to describe spatial arbitrage and the Law of One Price*
2. *Students will be able to determine when the Law of One Price may be violated and why*
3. *Students will understand the role of transactions costs in spatial arbitrage and price patterns*
4. *Students will be able to estimate simple spatial equilibrium models between two prices and interpret the results*
5. *Given a 3-panel trade diagram, students will be able to interpret the equilibrium price in two markets, identify the quantity of trade, and identify the level of transactions costs.*
6. *Given a stylized trade scenario, students will be able graphically depict the outcome using a 3-panel diagram.*
7. *Students will be able to recognize disequilibrium in forecasts and use it for decision making*

### **Sample Grade Outcomes and Computations:**

#### Student A

*First Midterm = 80 out of 100*

*Second Midterm = 50 out of 100 (lowest midterm score omitted)*

*Third Midterm = 85 out of 100*

*Final Exam = 75 out of 100*

*Problem Sets = 650 out of 700 (all problem sets added together with lowest score omitted)*

*Attendance and Participation = 0 out of 100*

$$\text{Total Grade} = 0.25*80 + 0.25*85 + 0.25*75 + 0.2*(650/700)*100 + 0.05*0 = 78.6 = C+$$

#### Student B

*First Midterm = 90 out of 100*

*Second Midterm = 90 out of 100*

*Third Midterm = 97 out of 100*

*Final Exam = opted out*

*Problem Sets = 690 out of 700 (all problem sets added together with lowest score omitted)*

*Attendance and Participation = 100 out of 100*

$$\text{Total Grade} = 0.25*90 + 0.25*90 + 0.25*97 + 0.2*(690/700)*100 + 0.05*100 = 93.7 = A$$