AGEC 305
AGRICULTURAL PRICES
(3 Credit Hours)
Fall 2019
COURSE SYLLABUS

Instructors: Professor Ken Foster and Mason Gordon

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Mr. Gordon’s Office: 683 Krannert Building

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Class Time: MWF, 12:30 -- 1:20 p.m. WALC B066.

Office Hours:
Dr. Foster: Monday 1:30-3:30 p.m. and Thursday 10:00 a.m. to 12:00 p.m.
Mr. Gordon: Monday and Wednesday 11 a.m. to 12:15 p.m.

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 the Department of Agricultural Economics calculus requirement. We will utilize basic calculus concepts during the semester to reinforce economic principles and derive decision parameters from data models. We will also use Excel spreadsheets for plotting data, creating new representations of prices, deriving simple statistical summary measures, linear regression analysis, and forecasting.

Textbook:


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.

Class periods will typically focus on blending theoretical concepts with data analysis and extracting their value for decision making in practical settings. Data analysis exercises will focus on building analytical skills necessary to quantify the economic concepts and complete associated homework assignments. These assignments and classroom activities will generally be completed using Microsoft Excel ©. Students are expected to be familiar with basic functions in Excel so that class 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. The instructor is not familiar with Mac computers and will be unable to help with Excel issues nor will this be allowed to distract from teaching and learning in the classroom

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.

You are expected to bring a laptop computer to class each day. Your laptop should either be fully charged or you should arrive at class with sufficient time to plug it in. Grades will not be directly determined by a student’s adherence to this policy but those who do not bring a computer to class will be at a great disadvantage and their grades will likely suffer. Students may share a computer (2 persons per computer maximum) as long as they are not disruptive and both parties are actively participating.
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. There will be no “curving” of grades.

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

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>GPA Index</th>
<th>Class Point Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4</td>
<td>97 – 100</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>93 – 96.9</td>
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<tr>
<td>A-</td>
<td>3.7</td>
<td>90 – 92.9</td>
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<tr>
<td>B+</td>
<td>3.3</td>
<td>87 – 89.9</td>
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<tr>
<td>B</td>
<td>3</td>
<td>83 – 86.9</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td>80 – 82.9</td>
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<tr>
<td>C+</td>
<td>2.3</td>
<td>77 – 79.9</td>
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<tr>
<td>C</td>
<td>2</td>
<td>73 – 76.9</td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
<td>70 – 72.9</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
<td>67 – 69.9</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>63 – 66.9</td>
</tr>
<tr>
<td>D-</td>
<td>0.7</td>
<td>60 – 62.9</td>
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<tr>
<td>F</td>
<td>0</td>
<td>Less than 60</td>
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The tentative dates for the exams are:

In-Class Midterm Exam I (Monday Sep. 16th)

In-Class Midterm Exam II (Wednesday Oct. 9th)

In-Class Midterm Exam III (Monday Nov. 18th)

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, they become the student’s dropped examination score in computing the final course grade 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 and Student Conduct:**

In general you may collaborate on homework assignments, however, each student must turn in her/his own original answer sheets. Even though collaboration is encouraged, I caution you against depending on each other too heavily with respect to homework assignments because working independently 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: [https://www.purdue.edu/purdue/about/integrity_statement.php](https://www.purdue.edu/purdue/about/integrity_statement.php) for additional information about Purdue academic integrity policies. Academic integrity is one of the highest values that Purdue University holds. Ideally, you will approach one of the instructors if you have concerns related to academic integrity and this course. However, individuals may also alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern. 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.
Rude, disrespectful, and threatening behavior or language will not be tolerated in this course. The instructors reserve the right to remove students from the classroom and course for such behaviors directed toward fellow students, university employees, or visitors to the Purdue campus. Such offenders will also be reported to the appropriate authorities.

**Students with Disabilities:**

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please make an appointment to speak with Dr. Foster within the first week of the semester (or immediately when these issue arise) in order to discuss any proposed accommodations. It is important that we talk about this as soon as possible. Please note that University policy requires students with disabilities to register with Disability Resource Center ([https://www.purdue.edu/drc/](https://www.purdue.edu/drc/) or drc@purdue.edu or by phone: 765-494-1247) to arrange for classroom or other accommodations.

**Diversity and Inclusion**

It is the instructor’s belief that disparaging remarks and treatment toward others based on their diversity parameters has no place in the academic setting. Such behaviors will not be tolerated in this class. Purdue University is committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The instructor’s experience is that respect for diversity strengthens a community, stimulates creativity, promotes the exchange of ideas, and enriches life. Purdue’s nondiscrimination policy can be found at: [http://www.purdue.edu/purdue/ea_eou_statement.html](http://www.purdue.edu/purdue/ea_eou_statement.html). It will be vigorously enforced and violations may result in grade penalties and removal from the classroom.

**Course and Instructor Evaluations**

The instructor greatly values 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). Extra credit points will not be awarded for completing the evaluations. However, if more than 90% of the class completes their evaluations then Dr. Foster will serenade the class.

**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 and the university.
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

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

Total Grade = 0.25*90 + 0.25*90 + 0.25*97 + 0.2*(690/700)*100 + 0.05*100 = 93.7 = A