Course Syllabus

The World Food Economy
Agricultural & Consumer Economics 251
Spring 2006

Instructor: Prof. Robert L. Thompson, RLT@uiuc.edu, Phone 333-1313. Office in room 412 of Mumford Hall. Office hours: Monday 10:00 a.m. to 12:00 noon and Wednesday 3:00-5:00 p.m., or by appointment.

Teaching Assistant: Ms. Ana Fava, anafava@uiuc.edu, phone 333-8540 (office hours only). Office hours: Thursdays and Fridays from 10:00 to 11:30 a.m. in room 419 of Mumford Hall.

Catalog Description of Course: Examination of global food production, consumption, and trade; problems of hunger and population; the role of agricultural development, trade, and aid in relieving hunger.

Lectures: The course meets every Monday, Wednesday and Friday from 9:00 to 9:50 a.m. in 103 Mumford Hall, except during spring break (March 20-24). Attendance at lectures is expected.

Course Requirements and Prerequisites: ACE 251 is worth 3 hours credit. An introductory economics course at the level of ECON 201 or ACE 100 is a prerequisite for this course. ACE 251 will satisfy the non-western cultural studies or social sciences General Education requirements in many curricula, but you should check with your academic advisor to confirm that it is approved for your program.

Grading, Exams and Assignments: There will be 500 attainable points in the course on the basis of which your grade will be determined:

- 50 Unannounced quizzes
- 100 Exam I on or about February 22, 2006
- 100 Exam II on or about April 10, 2006
- 150 Term Project (50 points on each of three parts, due Feb. 15, Apr. 3, and May 1)
- 100 Final Exam – Tuesday, May 9, 2006, 8:00-11:00 a.m.

Students are requested to inform the instructor of any conflicts at least one week before an exam. No cellular phones, PDAs, laptop computers, or hats will be allowed in the exam room.

It is important to hand in each assignment on time (or early). Late assignments will be graded down 5 points (out of a possible 50) for each day they are late.

Course Readings and Resources: The class home page is accessible through: http://webct.aces.uiuc.edu. Students can use their network username and password to gain access to the class home page.
The textbook for the course is *The World Food Economy* by Professors Douglas Southgate, Douglas Graham, and Luther Tweeten, all of the Ohio State University. It is being published by Blackwell Publishing, but it will not be available in bookstores this semester. With permission from the authors and the publisher, all chapters have been uploaded in pdf format onto the ACE 251 course website. You may print out one copy for personal use in this course.

There will be supplemental readings assigned to complement the content of the textbook from various periodicals and books. All assigned readings, as well as useful reference material, will be posted in pdf format on the course website. While the textbook and required readings will complement the material covered in lectures, they are not intended to be a substitute for attending class.

**Academic Integrity:** All University policies concerning cheating on exams and plagiarism on papers will be strictly followed (zero tolerance). It is assumed that all students are familiar with and agree to obey the University’s Code of Policies and Regulations Applying to All Students concerning academic integrity ([http://www.admin.uiuc.edu/policy/code/article_1/a1_1-402.html](http://www.admin.uiuc.edu/policy/code/article_1/a1_1-402.html)).

**Disabilities:** If you need accommodation for any sort of disability, please speak to the instructor concerning appropriate arrangements as soon as possible. Be advised that each student requesting special accommodation must provide the instructor with a letter from the Division of Rehabilitation--Education Services (DRES), phone 333-4603.

**Course Outline: The World Food Economy**

**Section I -- Consumption**

The first third of the course, to be covered on Exam I, treats the consumption side of the world food economy. It will begin by examining differences in diets across countries and how they change with income growth, urbanization and international communications. A framework for understanding such current hot issues as hunger in a world of plenty, diet fads, and obesity, will be presented. The course will then treat the dynamics of population growth and poverty reduction to understand the magnitude and location of future growth in food demand.

The causes of poverty will be explored, and we will see why successful implementation of a pro-poor development strategy often causes low income countries’ future food consumption to exceed their own food production capacity, resulting in greater dependence on the world market for part of their food security. We will also see why poverty reduction usually results in fewer farmers, larger farms, and a smaller share of urban food expenditures going to farmers.

We will also see why a food stamp program can make a significant contribution to poverty reduction, but why agricultural price supports and import tariffs don’t alleviate
small farmers’ poverty. This section will conclude that world food demand is likely to
double in the first half of the 21st century.

Section II -- Production

The second section of the course, which will be covered on Exam II, will examine the
production side of the world food economy and the challenge of doubling global food
production. It will start with a review of what commodities (plants and animals) are
produced where in the world today and why. We will review the projections of Malthus
and latter-day prophets of doom who have argued that population will grow faster than
food production, with starvation eventually limiting the world’s population. Instead,
agricultural research has raised agricultural productivity faster than food demand has
grown, resulting in surpluses more often than scarcity, and a 150-year decline in the real
price of grain.

The future will bring keen competition for land between food and forest production and
environmental conservation, and for water, between agriculture and urbanization. Then
we will ask whether further investments in agricultural research can relax the physical
constraints (soil, climate and topography) sufficiently to allow the world’s farmers to
double food production in the next 50 years at reasonable prices and without
environmental damage.

We will assess the most likely locations where larger production can occur, relate this to
where demand will be, and draw inferences for future international trade in food and
agricultural products. We will examine a number of contentious issues, including organic
vs. conventional production methods, agricultural biotechnology, the role of the private
sector in agricultural research, and patenting of agricultural technologies. Finally, we will
examine how farming systems vary around the world; why they tend to be labor-intensive
in low income countries, but capital-intensive in high income countries; and why central
planning has resulted in low productivity agriculture wherever it has been tried.

Section III -- Markets, Policy and International Trade

The final third of the course will start by reviewing the pattern and volume of current
agricultural trade flows. The fraction of world food production that moves through
international trade is growing, as is the fraction that moves in processed form. We will
analyze the evolution of the global supply chain and the tendency for agricultural
marketing, processing and international trade to be concentrated in the hands of fewer,
larger firms.

Next we will examine how domestic agricultural policies and trade policies distort the
spatial patterns of production of different commodities both within and among countries.
We will explore why the small numbers of farmers in most high income countries can
convince their governments to give them large subsidies and protection from import
competition, while governments in many low income countries impose disincentives on
their farmers, despite the fact that they make up the majority of those countries’ populations.

We will review the arguments for and against globalization, observing that trade liberalization results in both gainers and losers. While the gains of the gainers generally exceed the losses of the losers, this does not mean we can ignore the losers just because society in some average sense ends up better off. We will explore how subsidies and protectionism in high income countries increase the cost of food, reduce agricultural production efficiency, redistribute income and wealth to the largest farmers and land owners, and hurt poor farmers in low income countries.

We will note that the Uruguay Round of trade negotiations, which created the World Trade Organization (WTO), made a number of conceptual contributions, but did little to liberalize agricultural trade. Finally, we will assess the prospects for the current Doha Round of trade negotiations to do more to facilitate agricultural trade and the reasons why efficient producers in high income countries have a vested interest in its being truly a “development round.”

**Required Reading**

**Section I**

1. Southgate et al, Chapters 1; 2, and 8; sections 1 and 2 of chapters 10-15


**Section II**

1. Southgate et al, chapter 3, 4 (except section 4.2), and section 3 of chapters 10-15


**Section III**

1. Southgate et al, chapters 4 (section 4.2), 6, 7 and 16


**Term Project**

The term project will be a country case study. You may select any country (except your home country) which has a population over 3 million people and surface area of over 20,000 square kilometers from among those categorized as:

- Low Income
- Lower-Middle Income
- Upper-Middle Income

The project will consist of three parts, which will parallel the three sections of the course:

Part I: Consumption – due Wednesday, Feb. 15 in class.
There will be 150 attainable points in the term project. Each of the three parts will have 50 attainable points. The overall term project will count 30% of your final grade in ACE 251. Each part of the project will relate to topics covered in lecture and the required readings. You can also use chapters 11 to 15 from the book as reference and background information.

In each section of the project, you will receive a list of questions concerning your country. To gather the required information about your country, you will need to visit a number of websites and other references. You should be able to complete Part I of the project using only resources available on line.

The World Bank has an excellent country-level data bank where you will find many general data useful for this project:

The Food and Agricultural Organization of the United Nations (FAO) is the best source of information on the food and agricultural sector of all countries in the world:
http://apps.fao.org/

The United Nations Human Development Report 2005 contains many useful indicators of human well-being in each country:

Term Project – Part I: Consumption
Due in class on Wednesday, Feb. 15, 2006

Put the name of your country along with your name and netid at the top of the first page of your paper.

Be sure to cite the source of information used and the year to which it applies. Also, be sure to make explicit the units in which any piece of data is measured. Note that certain questions require you to print out and annex to your paper the data source(s).

1. Identify your case study country (5 points)

   a. Where is it? Who are its neighbors? Is it land-locked?

   b. Is it a low-, lower-middle, or upper-middle income country?

   c. How large is your country in square kilometers?
Note: Be sure the country you select is a developing country (Low, Lower-Middle or Upper-Middle Income) with population over 3 million people and surface area over 20,000 square kilometers.

2. **Population and Demographics** (15 points)

The two best sources of international demographic information are the U.S. Census Bureau ([http://www.census.gov/ipc/www/idbnew.html](http://www.census.gov/ipc/www/idbnew.html)) and the United Nations Population Division ([http://esa.un.org/unpp/](http://esa.un.org/unpp/)). Answer each question using the most recent year for which data are available.

a. Answer in the table below: What is your country’s total population (mid-year 2005)? What is the population density per square kilometer?

Table 1:

<table>
<thead>
<tr>
<th>Total Population</th>
<th>Area in km²</th>
<th>Population density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source:

b. In the table below, answer the following questions: How fast is the country’s population growing? How many years will it take for its population to double? How large is it projected to be by 2050? In what stage of the demographic transition is the country? What are the country’s crude birth and death rates? What is this country’s “natural rate” of population growth? Why might it differ from the observed growth rate? What is the life expectancy at birth for men and for women?

Table 2:

<table>
<thead>
<tr>
<th>Population Growth rate</th>
<th>Number of years to double population</th>
<th>Expected population by 2050</th>
<th>Stage of demographic transition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Crude birth rate</th>
<th>Crude death rate</th>
<th>“Natural rate” of population growth</th>
<th>Life expectancy at birth - men</th>
<th>Life expectancy at birth - women</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

Source:

c. Print out the country’s population pyramid for 2005, and attach it to your report ([http://www.census.gov/ipc/www/idbpyr.html](http://www.census.gov/ipc/www/idbpyr.html)). What does it tell you about the age structure of this country’s population? Is its population likely to be growing rapidly or slowly? What is this country’s child (<15) dependency rate? Adult (>65) dependency rate? (Show your calculations.)
e. What percent of the population is urban? Is it likely to increase much in the future? What is its biggest city? How many agglomerations of over 1 million people does this country have? [http://www.citypopulation.de/World.html] Does it have any megacities? If so, name them.

3. **Income, Poverty, and General Well-Being** (15 points)

a. In the table below, what are this country’s total and per capita GDP and GNI (= GNP) in U.S. dollars on both the “Atlas method” and purchasing power parity (PPP) bases? ([http://www.worldbank.org/data/quickreference/quickref.html](http://www.worldbank.org/data/quickreference/quickref.html)) Indicate for what year the data apply. How fast is GDP growing? Is it growing faster or slower than population?

<table>
<thead>
<tr>
<th>Year: _____________</th>
<th>Total</th>
<th>Per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Atlas Method” GDP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Atlas Method” GNI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPP GDP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPP GNI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source:

b. Compare the country’s total GDP using the “Atlas method” and the PPP method. Do the relative magnitudes of these two numbers suggest that this country’s currency is over-valued or under-valued at its official exchange rate? (Hint: Go back and look at The Economist magazine’s “Big Mac Index.”)

c. How many people live on less than $1 per day and on less than $2 per day?

<table>
<thead>
<tr>
<th>People living on less than $1 per day</th>
<th>People living on less than $2 per day</th>
</tr>
</thead>
</table>

Source:

d. How much of this country’s income is received by the: poorest 10%, poorest 20%, richest 20%, and richest 10% of the population. What is its Gini index?

<table>
<thead>
<tr>
<th>Poorest 10%</th>
<th>Poorest 20%</th>
<th>Richest 20%</th>
<th>Richest 10%</th>
<th>Gini Index</th>
</tr>
</thead>
</table>

Source:

e. Is this country’s rank among all countries according to the U.N. Human Development Index (HDI) higher or lower than its rank according to PPP GDP per capita? What factor(s) in the HDI most affect the difference in rank?
4. Composition of Food Consumption, Nutritional Deficiency Diseases and Hunger
(15 points)

a. Find the FAO Food Balance Sheet for this country and print it out:
(http://faostat.fao.org/faostat/form?collection=FBS&Domain=FBS&servlet=1&hasbulk=0&version=ext&language=EN) How much total calories and protein are available per capita? Compare to the RDA of a man 25-50 years old. Is the caloric availability sufficient to sustain high productivity of a working man?

b. What is the principal starchy staple in this country’s diet? Do any other staples provide more than 10% of the country’s caloric availability? What percent of the calories come from plant vs. animal sources? Is the principal staple imported or exported? If imported, what percent of the total availability is imported?

c. What can you infer from the Food Balance Sheet about the likelihood of undernutrition in this country, and about the incidence of nutritional deficiency diseases?

d. Consult http://www.ers.usda.gov/data/InternationalFoodDemand/ to get the food budget shares for this country. What are the estimated price and income elasticities of demand for food for this country? (If this study did not include your case study country, use their estimates for another country at a similar level of income per capita in the same region. If you do this, identify the country whose data you use.) Explain what would happen if per capita disposable income increases 10%? If the price index of food increases 10%? Would these numbers be higher or lower for the lowest income members of society in this country?

e. Based on the information you collected for this project what can you say about this country’s household food security? Its national food security? Do you expect the national food security of this country to improve or to deteriorate in the future?

Hint: Begin with the definition of household and national food security, then justify your answer using the information collected in questions 2, 3 and 4 above.

Term Project – Part II: Production
Due in class on Monday, April 3, 2006

This section of the term project is worth 50 points. Be sure to cite the source of information used. Also, be sure to make explicit the units in which any piece of data is measured. Print out the data sources and append them to your paper.

1. Land (8 points)

a. For your country, what are the areas (in metric units) of:

   - Total land
   - Forested area
Arable land
Cropped land
Grazing land
Permanent pasture

Useful references:

FAOSTAT:

World Bank World Development Indicators:

b. How much more land could be brought into production that is not highly erodible, subject to desertification, or presently forested?

Start with the data you gathered to answer question 1a above. Then, you can find global maps on water and wind erosion and on desertification at:

(Again, download the “high quality” maps and zoom in on your country.) These will not give you numerical estimates, but will give a sense of to what extent your country is subject to erosion and desertification.)

2. Climate (8 points)

a. In what climatic zone(s) is your country?

Reference:
http://www.blueplanetbiomes.org/climate.htm

b. Under what prevailing winds is your country? Are they the same all year around?

c. Characterize the rainfall in terms of its levels, variability from year to year, and seasonality.
d. Characterize the average January and July temperatures.

For both c and d:
See NOAA Climates of the World (While this source is dated, climate doesn’t change that fast.): http://www.nedc.noaa.gov/oa/documentlibrary/pdf/climatesoftheworld.pdf

http://www.worldclimate.com/
3. **Soils** (5 points)
   
a. Your country’s soils fall in what soil order(s)?
   
   
(Hint: Download the “high quality” version of the map and zoom in for detail on your country)
   
b. What are the qualitative characteristics of this/these soil orders?
   
See required reading: [http://soils.ag.uidaho.edu/soilorders/](http://soils.ag.uidaho.edu/soilorders/)

4. **Agroecological Zones** (7 points)
   
a. In which agroecological zone(s) is your country?
   
Consult the required reading by Sivakumar & Valentin and the associated maps.
   
b. What are the principal physical constraints on agricultural production?

USDA (download “high quality” map and zoom in on your country):

5. **Agricultural Production System** (12 points)
   
a. List each crop your country grows which takes more than 10% of its cropped land. What is the average yield (in metric tons per hectare) for each of these crops? How does this compare to the world average yield in this crop? To the U.S. average yield (if it grows this crop)?
   
FAOSTAT:
   
b. What is this country’s total fertilizer use? What is the average application per cropped area (metric tons per hectare)?

World Bank World Development Indicators, Table 3.2:

International Fertilizer Industry Association:

United Nations Environment Program:
[http://geocompendium.grid.unep.ch/data_sets/land/data/fertilizer_consumption.htm](http://geocompendium.grid.unep.ch/data_sets/land/data/fertilizer_consumption.htm)
c. What is the irrigated area in your country? How much potential does the country have to expand its irrigated area?

FAO AQUASTAT database:

World Bank World Development Indicators, Table 3.2:

6. Farming Systems (10 points)

In FAO’s book Farming Systems and Poverty (http://www.fao.org/farmingsystems/), read the chapter on the region of the world in which your country is located. List the farming system(s) found in your country and characterize the trends and issues related to each farming system.

Term Project – Part III: Markets, Policy & Trade
Due in class on Monday, May 1, 2005

This section of the term project is worth 50 points out of 500 possible points on your final grade in this course. Be sure to cite the sources of information used on each question (or print them out and annex them to your paper). Also, be sure to make explicit the units in which any piece of data is measured. (Use only metric units.) You are likely to find it useful to draw upon data sources used in parts I or II of your project. Several potentially useful additional sources are noted here.

Put the name of your country along with your name at the top of the first page of your paper.

1. Agricultural Development in Your Case Study Country (15)

a. What percent of the population is engaged in agriculture? Is this increasing, steady or declining? What’s the future outlook for employment in agriculture? Is there any link between employment in agriculture and the likelihood of success in poverty reduction in your country?

b. Do you feel that your country’s agriculture is performing up to its potential consistent with both economic efficiency and environmental sustainability? Why? Or why not?

Hints: Start by considering how crops yields (or animal productivity) in your country’s main product(s) compare to those in other countries.) If productivity is lagging, try to identify possible reasons for the lag.

Also, your characterization of the farming system(s) in your case study country in question 6 of part II of the term project should be useful in answering this question.
c. If you could play agricultural research czar in your country, what would be your highest priority for additional investment in agricultural research? (The focus could be on product(s) and/or region(s).) What present constraint would this research attempt to relax? Explain your logic in identifying this priority. (For example, if the country has a significant area of land that cannot be cropped because of salinity, development of salt-tolerant varieties might be a high priority so that that land could be made productive and brought into production.) [Note: There are no right or wrong answers to this question. You will be graded on the knowledge you show of the agricultural conditions in your country and the logic you follow in justifying the research priority you identify.]

2. Agricultural Trade (20)

a. How self-sufficient is your country in food? Is this more or less than what you would consider consistent with both economic efficiency and environmental sustainability? Why?

b. What are your country’s 3 main agricultural imports and/or exports? How important are they to the balance of payments of the country? Does the trade occur in mainly raw, bulk commodity form or in higher value, more processed form? Would you consider your country to be a large or small (in the economic sense) trading country in each of these products?

c. If your country is an agricultural exporter, does it confront barriers to those exports which restrict its ability to export products in which it has a present or potential comparative advantage? If it is an agricultural importer, does it get these imports commercially or as food aid or on a subsidized basis? (FAOSTAT has data on food aid shipments.) Are the food imports products that local farmers also produce? If so, do they depress the price received (and therefore earning potential) of local producers?

d. Is the country a member of the WTO? In the current round of agricultural trade negotiations under the auspices of the World Trade Organization (the “Doha Development Agenda”), what are its main priorities? (Even if it is not a member of the WTO, what does this country want to come out of the negotiations?) In what way would it expect to benefit if the negotiations resulted in its priority being achieved? Does this country belong to any of the organized coalitions (often called “Groups,” e.g. the Cairns Group, the Group of 77, the G-20, the G-10, etc.)? What are this group’s main priorities in the negotiations?
3. Investment Climate (7)

For both agricultural development and general economic development to occur in a country, there are several essential things its government must provide (with or without outside financial assistance). These include:

- infrastructure (e.g. rural roads, telecoms, and electric power),
- investments in human capital (e.g. primary school education and health care services)
- a favorable investment climate (characterized by such things as macroeconomic stability, stable and honest government, rule of law, a commercial code, which among other things defines property rights and contract sanctity, and a judiciary that fairly and expeditiously adjudicates disputes concerning the latter).

a. Present data in each of the three categories to illustrate the extent to which these preconditions for successful development are in place in your case-study country? What do you judge to be the greatest deficiency in this area? Why? (Again, there is no right or wrong answer to this. What matters is the logic you use to argue why remediying the deficiency would have a high payoff.)

As one source of data on the investment climate variables listed, the Heritage Foundation (a DC-based conservative think tank) publishes an annual “Index of Economic Freedom,” the components of which are available on line for each individual country at: http://www.heritage.org/research/features/index/countries.cfm. (The variables included in calculating the Index of Economic Freedom for each country are explained in: http://www.heritage.org/research/features/index/chapters/pdfs/Index2006_Chap5.pdf)


a. As you look out several decades into the 21st century, consider the dynamics of both food demand (e.g. considering your country’s projected population growth and potential economic growth that reduces poverty) and agricultural supply (e.g. considering physical constraints on additional food production, potential area expansion in agriculture, and productivity growth), how do you expect your country’s role in the world food and agricultural economy to change? Will it be a larger exporter or importer of food and agricultural products? Explain why you expect your country’s role to evolve in the manner. (You will probably need to refer back to data assembled in parts 1 and 2 of the term project when answering this question.)