NUTR 238 – Economics of Food, Agriculture and Nutrition

*(formerly known as **Economics for Food & Nutrition Policy**)*

Syllabus for Spring 2025

Contents

(clickable links to each section)

NUTR 238 – Economics of Food, Agriculture and Nutrition

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1. The basics: what, who, when and where

Course objectives

NUTR 238 helps students use economic principles to explain, predict and evaluate changes in agriculture, food and nutrition. We build the analytical methods and data sources needed to:

(1) identify causal relationships in and between production, consumption and trade using analytical diagrams that embody economic principles;

(2) evaluate the business and social welfare consequences of changes in markets and policies including regulation, taxation and enforcement of property rights;

(3) use data to compare outcomes in terms of poverty, inequality and disparities between groups, in relation to trends and fluctuations over time.

Instructor: Will Masters William.Masters@tufts.edu
To schedule a call: https://calendly.com/willmasters
Background info: http://sites.tufts.edu/willmasters

Teaching assistant: Ellie Hohenstein Eleanor.Hohenstein@tufts.edu

Class sessions: ***Tuesdays and Thursdays, 4:15-5:45 pm*** **in Jaharis room 118**
For students who cannot attend in person,
classroom audio/video will be available via Canvas on Echo360.

Help sessions: *Fridays noon-1pm, Zoom only: 986 8632 5871, passcode:* ***000238****.*
Office hours with Will, usually focused on each week's exercise.

Tuesdays noon-1pm, in Jaharis room 133 (zoom option on request)
Methods review with Ellie, usually for computer skills used in class

Textbook: *Food Economics: Agriculture, Nutrition and Health,* by W.A. Masters and A.B. Finaret (New York: Palgrave Macmillan). (This book is open access, so you can read as a PDF or eBook on any device. For example, you can read it on your phone using any eReader app, and also on your laptop in PDF form.)

Tufts credit: *3 semester-hours,* meaning 3 classroom hours per week over 15 weeks. The baseline expectation is at least 6 outside-of-class hours of studying and exercises, for a total of 9 hours/ week, which includes reading, discussion and either project or exams.

Prerequisites: *None*. The math we use is basic geometry, drawing lines and curves on a plane, and we do a lot of data visualization but no statistics or regression.

2. Schedule of topics and assignments at a glance

Week # and dates	**Topic** *and textbook chapter*	**Exercises** (due at the end of Sunday, 11:59pm ET)
Intro. Jan 16	Introduction and housekeeping *Chapter 1*	1. Keeping up with AI (Microsoft Copilot) (Jan. 19)
1. Jan 21+23	What is food economics? *Chapter 2.1*	2. Least cost diets (food prices & nutrient needs) (Jan. 26)
2. Jan28+30	Consumption and food demand *Chapter 2.1 (continued)*	3. Food choice news analysis (indifference curves) (Feb. 2)
3. Feb 4+6	Production and food supply *Chapter 2.2*	4. Farm supply news analysis (production possibility frontiers) (Feb. 9)
4. Feb 11+13	Market prices and quantities *Chapter 3*	5. Markets & prices news analysis (supply, demand & trade) (Feb. 16)
5. Feb 18*	Social welfare and externalities *Chapter 4*	6. Externalities news analysis (supply, demand & trade) (Feb. 23)
6. Feb25+27	Market structure and monopolies *Chapter 5*	7. Market power news analysis (marginal revenue & expenditure) (Mar 2)
7. Mar 4+6	Government policies and programs *Chapter 6*	8. Policy news analysis (economic surplus) (Mar. 9)
8. Mar 11+13	Midterm review (Tues) and exam (Thurs.), midcourse survey (due Sunday Mar. 16) *Nothing new – write summary of slides & exercises, practice with past exams*	
Spring break	*[If project option is chosen, stage 1 due Sun. Mar. 23 at 11:59pm]*	
9. Mar25+27	Poverty, safety nets and risk *Chapter 7*	9. Global poverty & nutrition data analysis (tables) (Mar. 30)
10. Apr 1+3	Food, health and behavioral econ. *Chapter 8*	10. Intl. dietary transition data analysis (scatterplots) (Apr. 6)
11. Apr 8+10	Food in the macroeconomy *Chapter 9*	11. U.S. poverty & nutrition data analysis (line graphs) (Apr. 13)
12. Apr 15+17	Growth and development *Chapter 10*	12. Food trade data analysis (line graphs) (Apr 20)
13. Apr 22+24	Global markets and trade policy *Chapters 11 & 12*	*No exercise due – project work or exam prep instead, plus course evaluations*
14. *Review* Apr29+May1	For exam takers: review sessions during class time *Nothing new – redraw class slides & news analysis diagrams, practice past exams*	
15. *Finish* May 6	Final exam (done online), tentatively Tuesday May 6th from 1 to 4pm *If project is chosen, complete report + presentation slides due at final exam time.*	

* No class on Feb 20 because Monday's schedule applies that day.

3. Course content: active learning, one week at a time

This course is designed around active learning, in person and online. You can do fine in the class by completing each activity from day to day through the course site at canvas.tufts.edu.

If you've read this far in the syllabus, congratulations! Reading this and other documents found on Canvas will be rewarding, offering unusually detailed written explanations. Each document like this one starts with the essentials of what's needed, and then provides detailed guidelines and explanation of how and why that activity will help you.

This detailed syllabus and the other course documents are designed so that a quick scan of headings and paragraphs will tell you what's there, so you can return to it as needed later.

Using the textbook
The content of this course has now been published as a textbook, entitled *Food Economics: Agriculture, Nutrition and Health.* Reading ahead for each week will help you prepare for class, and looking back will help you find your footing if you miss a step. The class itself consists of each activity you find on Canvas, including class slides and assignment guidelines which lead to analysis of current events and up-to-date data of interest to you. For data analysis, some students may also want extra help with Excel, for which there are many videos and explanations online. For extra-ambitious students, the last pages of this syllabus have a section entitled *Journal Club* with links to recent research on each week's topic by Friedman faculty and others.

Speaking up, in class and on Canvas
During each class session in person, you are welcome to raise your hand at any time, and are also encouraged to open a zoom chat box on your phone (without joining audio!) so as to ask questions and make comments that way if you prefer texting to talking. You are also welcome to rename yourself so as to ask questions or make comments anonymously in the chat, and ensure maximum possible participation. We also have weekly discussion boards for each topic on Canvas for you to share comments and links, and many opportunities for conversation before or after class, as well as during the Friday help sessions.

Communicating clearly, with specific subject lines via email
My job is to help you, but I can do that only if you say what you need as soon as you need it. For me and most faculty, the best channel is email, with subject lines that say what you need. Subject lines should be specific, such as "What is ____?", "Can I do ____?". In an emergency you can just write "I need help", but it is much easier to help if you say "I need help with ____". For most things please send a single email to me and all TAs simultaneously, so whoever gets to it first can reply-all and solve the problem as fast as possible, but if you need confidentiality you can email with one of us individually. The main thing is for you to communicate as early and as clearly as possible. I will respond as soon as you can, but if you email after a deadline or event it will be too late for me to grant an extension or help solve the problem.

4. Assignments, feedback and grading

The course is a sequence of activities, each designed to foster insight and help you practice the skills you will need to use economic principles in real life. The full set of assignments with numerical feedback is detailed below, in addition to which other written and verbal activity includes participation in each class session, optional weekly online discussion forums, an optional group discussion of that week's exercise each Friday at lunchtime, and individual conversations at other times.

Summary of numerical scores recorded in Canvas

Weekly Exercises (top 10 of 12, 5 pts each)	50 points
Project or exams	50 points
Midterm (20) & final (30)	
or Project report & slides (50)	
Total	100 points

Letter grades for this course will be assigned holistically based on mastery shown in the final exams or the project, plus consistent performance on the weekly exercises and class participation. Education is an odyssey, in which each step matters but what counts the most is your peak achievements. In practical terms, the odyssey principle of grading means that weekly exercises all count equally and add up to one-half of your numerical score for the semester, and the other half is driven by peak achievement in the exams or a project. Of the twelve weekly exercises, the two with the lowest score will be dropped, so you can miss two without penalty. With exams a better score on the final replaces mistakes on the midterm, and with projects your initial score on the draft first phase will be replaced by a final score. Students who are unable to complete anything on time for any reason should notify me by email, or by phone or text if needed, *prior to the deadline*, with a brief explanation for why the extension is needed.

In this class the only feasible way to achieve high numerical scores is to actively participate in class and complete the weekly activities. Historically, every student who does that has earned roughly the same or higher grades than they usually get in other quantitative classes. Because there are no readings, group work or other time-consuming tasks, students who are attentive in class and then follow exercise instructions can readily complete the course with the standard six hours of homework in addition to three hours of class each week. Many of the students enrolled each year take that approach, but the class also offers many opportunities for much more discovery, analysis and learning each week, on whatever topics catch your attention.

After each week's classes, a series of twelve exercises help build your economist skills. The first two are warm-up exercises to start thinking about what economists actually do, and to see the connection between food choice and human nutrient requirements. The next six exercises apply economic principles to news stories about current events in the food system, and the last four practice downloading and analyzing authoritative data about trends over time and disparities among countries. Each of these assignments is scored out of 5 points. Two are dropped so only the top 10 are counted, for a total of 50 points. The remaining 50 points can be from either exams or a project option.

5. Career goals and study practices

The skills learned in this class are how to interpret observed outcomes as the result of economic principles drawn in analytical diagrams, how to obtain and transform data into meaningful charts and tables, and how to describe the results of accurately in plain English. These skills will be very useful in any career path. Students who also take a few other economics courses may get jobs with "economist" in the title, often doing more advanced things not in this class such as statistical estimation, hypothesis testing and empirical modeling.

Before spring break: economic principles and analytical diagrams. To complete each week's exercise and prepare for the midterm exam, the most important step is for you to practice redrawing each type of diagram. These diagrams show the logic of causal mechanisms behind the data we see, just like diagrams used in nutritional biochemistry or other natural sciences. Practice drawing them many times yourself is key to understanding.

After spring break: data analysis and visualization. To complete the last four weekly exercises, and the course project if you are doing one, you must download and transform data into your own original charts and tables using Excel. As with the analytical diagrams, success requires deliberate practice, catching and fixing mistakes and clearly writing up your results in plain English to explain what you discovered each week.

6. Choosing between exams or project option

Most students choose the exam option, which applies the skills learned through the exercises to answer food and nutrition policy questions raised by recent news stories. Students who have kept up in class and on the weekly exercises, and have then reviewed the whole story arc before each exam, will find the exams very straightforward. Both exams are like our news analysis exercises, asking you to draw the analytical diagrams used to explain, predict and evaluate changes in agriculture, food and nutrition. This is the standard skill that economists use to analyze individual choices and societal outcomes. Previous exams and their answer keys are available for practice. The questions refer to different scenarios but the analytical tasks are readily practiced by answering previous years' questions under exam-like conditions.

A few students prefer the project option, which requires much more time than exams but allows you to do a deep dive into a specific topic of special interest to you. A first stage due after spring break is given an indicative score, and then a final report plus presentation slides given a final score out of 50 points. Detailed project guidelines are available for students considering this option. Doing a project is time-consuming but rewarding for those seeking to investigate a particular question in depth. This can be especially valuable if that investigation helps guide your future career, and you can use the report itself as a writing sample for job applications. The project options can be very rewarding but if you just want to do research in general and don't have a topic in mind, the exam option is usually a better way to build skills because it covers all the topics. Students should choose whether to take the exams or pursue a project in the first few weeks of class, by the time of the midterm in week 8 at the latest.

7. Summary of the weekly exercises

Our weekly exercises, together with the exams or course project, are designed to help you gradually build the skills needed to use economics in your professional life. Each exercise adds an additional skill by digging into a specific real thing, so as you practice economics, you'll also be learning amazing facts about agriculture, food and nutrition. Scores on each exercise count for 5 points and we drop the lowest, for a total of half the available points for the semester.

Ex. #1. Keeping up with AI: practice with Microsoft Copilot
NUTR 238 aims to build your skills at finding information about agriculture, food and nutrition, then explaining, predicting and evaluating change using the logical principles and factual knowledge accumulated through decades of economics research. The available software tools change quickly, so we start with a warm-up exercise using Microsoft Copilot to generate text, tables and figures that you can then critique and improve. *(One takeaway: AI gives you great powers which you can use well or badly; using tools well requires practice and experimentation.)*

Ex. #2. Transforming data: foods, nutrients and the least-cost diet
Use real data on food prices, the nutrient composition of each food, and a typical person's nutrient requirements for a healthy and active life, in an Excel template to calculate the least expensive way to meet nutrient requirements, and then write in a Word template about how those results compare to data from the FAO and national statistical services on what very low-income people actually eat. *(One takeaway: Food choices are related to nutrient needs, but influenced by many other factors as well.)*

News analysis exercises

The next set of six exercises (3-8) deepen your skill drawing analytical diagrams. These diagrams capture the logic of economics, just like writing H_2O in chemistry. To practice applying economic logic to everyday life, we'll do six "news analysis" exercises in which you'll find two media reports about that week's topic and use economics to explain current events.

Ex. #3. News analysis about consumption preferences and food demand
Indifference curves and budget lines
Draw indifference-curve diagrams (and demand curves) to explain two recently reported changes in food demand, one change in income or purchasing power, and one change in habits or preferences. *(One takeaway: Food choices are driven by income and preferences, not just price.)*

Ex. #4. News analysis about agricultural production and food supply
Production possibility frontiers
Draw production-possibility diagrams (and supply curves) to explain two recently reported changes in food supply, one change in natural conditions and one change in available technologies. *(One takeaway: Agriculture is driven by climate and technology, not just price.)*

Ex. #5. News analysis about markets and prices
Supply, demand, and trade
Draw supply-demand diagrams to explain two recently reported changes in food supply, demand, and prices. One story should reflect food-related services that are not transported or traded over long distances; the second story should involve a food that is either imported or exported. *(One takeaway: Most farm products are traded, so local supply and demand have little effect on their price; it's local services whose prices are driven by local supply and demand.)*

Ex. #6. News analysis about environmental and social externalities
Economic surplus and non-market costs or benefits
Draw supply-demand diagrams to explain two recently reported stories involving food-related externalities. One should be related to production, and the other should be related to consumption. *(One takeaway: Food systems often have consequences well beyond the people who are actively participating in the marketplace.)*

Ex. #7. News analysis about market structure and monopoly power
Market power and the role of competition in social welfare
Draw supply-demand diagrams with marginal revenue or expenditure curves to explain two recently reported changes in agribusiness or the food industry, where one company may (or may not) come to have monopoly power. *(One takeaway: Prices depend on how people and companies interact, which we call the structure of the market between them.)*

Ex. #8. News analysis about food policy and social welfare
Political economy and social choice to improve outcomes
Draw supply-demand diagrams, one with and one without trade, to explain two recently reported changes in government policy. *(One takeaway: Policies can improve outcomes, but often have big unintended side effects.)*

Data analysis exercises

The final set of exercises (9-12) build your quant skills for working with numbers. We won't do statistics to estimate functions or test hypotheses, and won't run simulation models, but we will practice the more fundamental task of transforming data to see it through the language of charts and tables. To practice visualizing numerical things, we'll do four "data analysis" exercises in which you'll download what's available, use Excel to transform it into a useful form, and create a chart or table that allows you to describe the world. For help with Excel, please reach out to the TAs or consult the many resources available online.

Ex. #9. Global poverty and nutritional outcomes

Create tables that compare income levels and poverty, food consumption and nutritional status around the world using data from the World Bank. *(One takeaway: Most things are never measured, so we need to look hard for data, read carefully about it, and use it creatively.)*

Ex. #10. Dietary transition around the world

Create scatter plots that reveal cross-country patterns in obesity and consumption of packaged foods, using Euromonitor data on branded foods and beverages, and World Health Organization (WHO) data on obesity rates. *(One takeaway: The transition to packaged and restaurant food is closely tied to rising obesity rates, with wide variation across countries.)*

Ex. #11. US macroeconomic conditions, diet quality and nutrition assistance

Create line graphs that trace economic fluctuations and changes in food expenditure as well as the Supplemental Nutrition Assistance Program (SNAP), using US national data. *(One takeaway: Economic collapse during COVID differs from previous recessions in many ways, but has notable similarities: people with money stop spending it, so the government can step in to smooth economic activity and prevent mass unemployment.)*

Ex. #12. International trade and the world food system

Create line graphs that put everything together, showing how production and consumption interact to drive international trade between countries, using worldwide data from FAOSTAT. *(One takeaway: Everything is connected. Economics offers a way to see interactions between different parts of the food system so that everything adds up, and you can see how farming, eating and trading influence each other, guided by our individual choices and government policies.)*

8. Context: a safe environment for learning and growth

Safety, diversity and inclusion
This class is for you. You belong here. As a school and in this class, we will do all we can to ensure that the course accurately represents the diverse experiences of all people, especially those whose lives often go unrecognized in society and in research. We will also do all we can to help you participate actively in this class, overcoming any barriers to participation and thereby create an academic climate built on diversity and inclusion.

Our success depends on your ability to participate. We offer many ways for you to share ideas within the class, and to let us know about barriers that we can help overcome.
If you notice obstacles of any kind, or believe that you or others were misrepresented, maltreated or disregarded in any way, please let us know. Your first point of contact for improving this or other classes is your instructor or teaching assistants, who can help in many ways within and outside the class. We can talk before or after each class session, or you can reach out for individual conversations at any time. If you have any concerns that we might not be able to solve, we encourage you to contact any of the school staff listed here: https://nutrition.tufts.edu/about/leadership. If you observe or experience any potential discrimination or misconduct, channels for anonymous reporting are explained here: https://oeo.tufts.edu/reporting.

Accommodation of disabilities and other special circumstances
Many students' circumstances can be obstacles to learning. We have a long track record of success is helping students achieve their academic goals, but can do this only if students actively request the accommodations they need. University-wide policies are detailed here: https://oeo.tufts.edu/policies-procedures/accommodation-policies. Accommodations are routinely provided for nursing mothers, students with qualified service animals, students with sincerely held religious beliefs, and students with physical or academic disabilities. Your confidential point of contact for all accommodations is Matt Hast, the Friedman School Assistant Dean of Student Affairs, at 617.636.6719 or matthew.hast@tufts.edu. Since accommodations cannot be provided retroactively, students must contact Matt Hast at the very start of the semester.

Mental and physical health
Tufts University offers a variety of assistance to support students' health and wellness.
If you feel sad, anxious, or maybe don't know what you are feeling, a first point of contact is the Boston campus Student Wellness Advisor who is paid by Tufts to listen, understand, and refer you to specific services as needed: https://medicine.tufts.edu/student-life/wellness/health-wellness. The full set of student wellness resources is here: https://nutrition.tufts.edu/student-life/student-affairs Tufts also offers strong support for students' spriritual and religious lives through the chaplaincy: https://chaplaincy.tufts.edu, and for physical activity with a downtown gym and other resources.

9. Academic conduct: rules of the road for success in this class

The academic standards we use to foster learning are spelled out in the school's Policies and Procedures Manual and other material from the Registrar (https://nutrition.tufts.edu/student-life/registrar). A few additional notes are provided here to help you succeed in this class.

Academic integrity and plagiarism
Education happens when we take other peoples' ideas and make them our own. Successful learning calls requires academic integrity, through which you transform class content and other material into your own work. The most common violation of academic integrity is plagiarism, whereby a student falsely claims to have created something that they copied from elsewhere. Plagiarism is best avoided by acknowledging sources, recognizing that all of us speak and write in terms that echo what we have heard and read. For example in economics, we all draw the same diagrams, but we apply and interpret them in unique ways. Resources to help you work effectively without plagiarism are included in our library's great guides to research and writing.

Academic conduct and climate
In this and other classes, learning is an exchange of ideas, connecting the dots between course content, your own experience, and the experiences of other students. We all have many shared values and beliefs, forming the common ground that holds us together. In the classroom it can be helpful to articulate those shared opinions, but it is especially important to hear dissent. Success depends on creating a climate of mutual respect and curiosity about each other and about the world. The phrase "campus climate" refers to inclusive practices for students with diverse backgrounds, especially marginalized or previously excluded groups, and also diverse viewpoints, for students with unusual or unpopular ideas. If we all think alike, no one can learn. If you have an idea that differs from what others are saying, we want to hear it!

Communication, making an effort, mistakes and skill-building
This class is designed to help you learn as much as you can, building skills from week to week. If you are unable to attend class or do activities on time for any reason, please reach out to me beforehand by email with a brief explanation of what you need. I can extend deadlines and will do my best to help you, but I can do that only if you send email as soon as possible with a subject line that tells me what's needed, and sufficient information for me to respond. The more effort you make in the class and in communicating with me, the more helpful and rewarding your experience will be. You are welcome to take the course lightly, and can succeed by being attentive in class and doing all activities within the target of nine hours per week (three in class, plus six for other work), but you might also love the content and spend more time on it. You will know you're succeeding not just from weekly feedback, but from aha! moments of insight, and noticing your own ability to do things faster and better. Each activity is designed to be just challenging enough for you to make, notice and fix mistakes. If you find yourself making no mistakes at all, or you don't fix the mistakes you make, you won't be learning. Beyond economics, this class teaches a variety of skills that will help you in many settings, most importantly the self-confidence to try new things and learn as you go.

10. Learning objectives for each week

Intro Week: Introduction and housekeeping

Exercise: #1. Keeping up with AI: practice with Microsoft Copilot

Objectives: Upon completion of this week, students will be able to:

- Describe the principles used in economics to explain and predict social outcomes
- Describe the strengths and limitations of economics as a social science
- Describe the strengths and limitations of economics for everyday life

Week 1: What is economics? How is it useful for food policy analysis?

Exercise: #2. Least cost diets

Objectives: Upon completion of this week, students will be able to:

- Use indifference curves and budget constraints to derive demand curves from observed prices and quantities
- Distinguish between the income effect and the substitution effect, graphically and conceptually
- Assess changes to consumer welfare that come from changes to the food system
- Describe the strengths and limitations of optimization as an explanation for food consumption choices around the world

Week 2: Food preferences, information, and dietary intake

Exercise: #3. News analysis about food choice and demand

Objectives: Upon completion of this week, students will be able to:

- Use change in budget constraints to analyze effects on dietary intake of programs that alter purchasing power, such as WIC, SNAP, school feeding etc.
- Use change in indifference curves to analyze effects on dietary intake of programs that alter preferences, such as advertising and behavior-change efforts

Week 3: Agricultural production and food supply

Exercise: #4. News analysis about farm production and supply

Objectives: Upon completion of this week, students will be able to:

- Use marginal costs, fixed costs and input response in production to derive supply curves, and identify the market conditions needed for perfect competition in food supply
- Use the distinction between scale economies and supply response to assess producer, consumer and social welfare changes in perfectly competitive markets, in self-sufficient locations and in trade with other regions
- Describe current events in the agricultural sector using economics principles

Week 4: Predicting food market prices and quantities (Tuesday only, no class on Thursday)

Exercise: #5. News analysis about markets and prices

Objectives: Upon completion of this week, students will be able to:

- Use elasticities to characterize consumer and producer response to changes in income, prices and production possibilities
- Explain why supply is the marginal cost curve and demand is the marginal benefit curve;
- Use supply and demand diagrams to explain observed outcomes and predict change; and
- Explore the supply and demand model with and without trade.

Week 5: Evaluating change in food market outcomes

Exercise: #6. News analysis about environmental and social externalities

Objectives: Upon completion of this week, students will be able to:

- Use supply, demand and economic surplus to evaluate the effects of government regulation and taxes on prices, quantities and social welfare
- Use supply and demand diagrams with and without international trade to explain and predict prices, quantities and social welfare changes
- Describe the opportunities for collective action to provide public goods and the policy options to address externalities.

Week 6: Market structure and monopolies

Exercise: #7. News analysis about market power

Objectives: Upon completion of this week, students will be able to:

- Use economics principles to identify the market conditions needed for firms to acquire monopoly power in markets for food, farm inputs and other sectors
- Describe the behavior of individuals and firms in monopolies and other market structures
- Describe current events in food markets in terms of market structure

Week 7: Government policies and programs

Exercise: #8. News analysis about food policy and social welfare

Objectives: Upon completion of this week, students will be able to:

- Use economic surplus to evaluate welfare consequences of externalities, environmental damage and other market failures
- Describe the opportunities for collective action to provide public goods and regulation, taxation and property rights enforcement to remedy market failures
- Describe current events in terms of market failure and collective action

Week 8: Midterm review / midterm exam in class on Thursday

Exercise: Redraw graphs, summarize notes and readings; take mock midterm exam

Objectives: Upon completion of this week, students will be able to:

- Use economic principles to explain and predict consumption, production and economic welfare changes using graphical methods
- Describe the strengths and weaknesses of economics methods relative to other approaches to explain, predict and evaluate responses to current events

-- Spring break --

For students who have chosen the project option, stage 1 is due at the end of the break, but can be submitted sooner for earlier feedback if desired.

Week 9: Poverty, safety nets, and risk

Exercise: #9. Data analysis about global poverty and nutrition

Objectives: Upon completion of this week, students will be able to:

- Use economic principles to apply poverty lines and other thresholds for measuring welfare and targeting social programs
- Describe major influences on income distribution, inequality and social mobility
- Obtain and present current data on global poverty and malnutrition rates

Week 10: Behavioral economics in the food system

Exercise: #10. Data analysis about international dietary transition

Objectives: Upon completion of this week, students will be able to:

- Describe recent findings in behavioral economics, incorporating psychology and marketing to explain non-optimizing aspects of food consumption behavior
- Use the distinction between income and substitution effects to assess consumer welfare changes in response to variation in prices and preferences

Week 11: Recessions, unemployment, and inflation

Exercise: #11. Data analysis about U.S. poverty and nutrition

Objectives: Upon completion of this week, students will be able to:

- Use economic principles to explain and predict business cycle fluctuations, including the timing and extent of recessions, unemployment and inflation
- Describe the role of fiscal and monetary policy in managing business cycles
- Obtain and present current data on incomes, employment and inflation

Week 12: Agricultural transformation and the dietary transition

Exercise: #12. Data analysis about food trade

Objectives: Upon completion of this week, students will be able to:

- Use economic principles to explain and predict economic growth and structural transformation between agriculture, industry and services over time
- Describe the experience of economic growth across countries and regions
- Obtain and present current data on economic growth and diet transition

Week 13: International trade and the food system

Exercise: No exercise due. Work on course project or prep for exam.

Objectives: Upon completion of this week, students will be able to:

- Use economic principles to explain, predict and evaluate changes in international trade, foreign investment and capital flows among countries
- Describe the major changes associated with globalization of agriculture and food
- Obtain and present current data on food production, consumption and trade

Week 14: Review and discussion

Exercise: Redraw graphs, summarize notes and readings; take mock final exam

Objectives: Upon completion of this week, students will be able to:

- Use economic principles for the various purposes described in the course description and weekly objectives
- Describe those various applications of economic principles in terms of their common features, strengths and weaknesses
- Judge the applicability of economics principles for personal, career and social decisions

Week 15: Final exam or course project completion

For those doing the project option, final reports and presentation slides are due at the same time as the final exam.

12. Journal club: frontiers of food economics

Research-minded students will know that exciting new work appears every year on all the topics we address in this class. To keep up, you might want to do occasional google scholar searches, and use the Tufts VPN for easy access to Tufts library subscriptions.

IMHO the best single source on current research is the detailed *Handbook* chapter here:

Masters, W.A., Finaret, A.B. and Block, S.A., 2022. The economics of malnutrition: Dietary transition and food system transformation. *Handbook of Agricultural Economics*, vol. 6, edited by C.B. Barrett and D.R. Just. Amsterdam: Elsevier. https://arxiv.org/abs/2202.02579

For individual studies by Tufts faculty, here's a list of at least one source for each week. Where we have not recently published something on the topic, I chose something else of interest:

Week 1: What is economics, and what can least-cost diets reveal about food policy?

Finaret, A.B. and Masters, W.A., 2019. Beyond calories: The new economics of nutrition. *Annual Review of Resource Economics*, 11, pp.237-259. https://doi.org/10.1146/annurev-resource-100518-094053

Bai, Y., Alemu, R., Block, S.A., Headey, D. and Masters, W.A., 2020. Cost and affordability of nutritious diets at retail prices: Evidence from 177 countries. *Food Policy*, p.101983. https://doi.org/10.1016/j.foodpol.2020.101983

Week 2: Consumer behavior and food demand

Hartmann, Monika, Sean B. Cash, Ching-Hua Yeh, Stefanie C. Landwehr, and Anna R. McAlister, 2017. "Children's purchase behavior in the snack market: Can branding or lower prices motivate healthier choices?" *Appetite* 117: 247-254. https://doi.org/10.1016/j.appet.2017.06.014

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Week 7: Government policies and programs

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Week 9: Poverty, safety nets and risk

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Week 10: Behavioral economics in the food system

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