

**NUTC-262 – Sustainable Food Systems and Markets  
Spring 2018**

<b>Class meeting:</b>	Online
<b>Instructors:</b>	Robert Guillemin Instructor, Sustainable Supermarket Lead, US EPA robert.guillemin@tufts.edu or 617-918-1814 Skype: guillemins4
	Natalie Valpiani Instructor, Food Policy and Nutrition Research Consultant natalie.valpiani@tufts.edu or 763-213-4604 Skype: nvalpiani
<b>Office Hours</b>	Fridays, 4:00 PM to 5:00 PM
<b>Credit awarded:</b>	1 credit
<b>Prerequisites:</b>	None

**Course Description:** By preparing and distributing food, food processors, wholesalers, and retailers transform the very nature of what we eat and establish the economic, social and environmental terms that shape much of the food system. This course will examine the dominant food system and explore the alternative strategies that seek to provide a reliable, equitable, and sustainable food supply from the “middle of the food system.”

**Course Objectives:** Upon completion of this course students will be able to:

- Define sustainability in the context of food processing, distribution, and retail.
- Describe the purposes, functions and impacts of the dominant food system (transportation, processing, and retail/institutional formats).
- Identify the leading and emerging sustainability initiatives and strategies that apply to the “middle of the food system.”
- Explain the roles and relationships of important stakeholders (business, advocacy groups, institutions and government agencies).
- Evaluate the economic, social, and technical barriers and trade-offs that challenge a sustainable food system.
- Apply important contextual concepts, including historical, theoretical and technical insights, to analyze and evaluate the course material.
- Consider solutions for improving the way food is processed, distributed, or sold.

**Course Materials:** Required readings are available online through the course website on Trunk, the Tufts University course management system. You are required to purchase [Introduction to](#)

the U.S. Food System: Public Health, Environment, and Equity edited by Roni Neff, published by Jossey-Bass. The book can be purchased on the publisher's website (<http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118063384.miniSiteCd-JBPUBLICHEA LTH.html>) or on Amazon.com and Barnesandnoble.com. The textbook is available as a new, used, rented, or e-book. Students based in Boston can also use the reserve room copy at the Hirsh Library on our Health Sciences campus.

**Academic Conduct:** The Tufts University official policy holds that academic integrity, including avoiding plagiarism, is critically important. Each student is responsible for being familiar with the standards and policies outlined in the Friedman School's Policies and Procedures manual: <http://nutrition.tufts.edu/student/documents>. It is the responsibility of the student to be aware of, and comply with, these policies and standards. In accordance with Tufts University's policy on academic misconduct, violations of standards of academic conduct will be sanctioned by penalties ranging from grade reduction or failure on an assignment; grade reduction or failure of a course; up to dismissal from the school, depending on the nature and context of any infraction: <http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic%20Integrity.pdf>.

The material you submit to show mastery of the course material must be your own work. We take proper academic conduct seriously, as it is unfair to other students when academic misconduct is not addressed. The policy followed here is quite simple: any proven plagiarism or cheating will result in a failing grade for the assignment and the entire course, and all violations will be reported to the Dean for Academic Affairs.

**Communication:** The instructors use email as the main form of communication and are also available by Skype during office hours to answer any questions. You will receive email replies within a day, but please do not expect instant replies. Classmates may also be contacted if there are questions about assignments and due dates..

#### **Course Assignments and Grading Criteria:**

<b>Assignment</b>	<b>Grading weight</b>
5 Quiz Assignments (6% each)	30%
1 Online Discussion Leader Article	16%
4 Online Discussion Responses (6% each)	24%
Final Exam	30%
	Total: 100%

**Quiz Assignments:** Students will complete 5 quiz assignments, each worth 6%, or 30% of the total course grade. These assignments will require students to apply and practice the concepts and ideas discussed during the week's readings and lectures. Assignments will include short answer, multiple choice, fill in the blank, and true/false questions. **Quiz answers are due on designated Saturdays at 11:59 pm (EST).**

**Discussion Leader Article:** Students will select one of five dates to submit a Discussion Leader Article, worth 16% of the entire course grade. The article presents an opinion or insight that initiates an online discussion among classmates. In addition to using course materials, the article must cite peer-reviewed **and/or** grey literature (i.e. periodicals, reports from government or non-government agencies). The instructors will provide a prompt question to help develop the discussion article and guide the following responses. **Discussion Leader articles must be posted on designated Thursday evenings by 11:59 pm (EST).**

**Grading Rubric: Discussion Leader Article**

Components	Expected Level of Competence	Moving Towards Expected Level of Competence	Below Expected Level of Competence
<b>Submission posted on time</b>	Complete and submit memo on time.	Post is submitted late.	Post is not submitted
<b>Style guidelines</b>	Adheres to word limit. Writing is clear and succinct. Demonstrates care in writing, which may be informal, but thoughtful. The post has a smooth flow of ideas and is well organized and logical.	Does not adhere to page limit. Writing lacks clarity in some places. Flow of ideas could use some improvement.	Does not adhere to word limit. Writing lacks clarity throughout. Flow of ideas is rough. Post is not well organized.
<b>Demonstrates careful reading &amp; listening to lecture material</b>	Demonstrates serious contemplation of the readings and lectures. Shows original thought that goes beyond the obvious.	Demonstrates reading was completed/lecture was watched, but relies primarily on summary rather than integration of information.	Gives little indication that reading/lecture viewing was completed.
<b>Application of theories/concepts to consumer behavior</b>	Articulates strengths and limitations of theory's application to professional context. Elaborates statements with accurate explanations, reasons, or evidence.	Provides general discussion of theory's application but lacks thoughtful critique. Takes a position with respect to theory application but with little evidence or explanation. Examples to support points are not well integrated or not effective.	Missing or limited theory application. Little evidence used to support points or evidence is out of context.

**Online Discussion Responses:** Students will submit at least four online discussion responses, worth 6% each, or a total of 24% of the total course grade. The responses comment on the Discussion Leader articles and/or other online responses. The responses help deepen the nature of the online class discussion by introducing new ideas and insights, raising questions, and posing opinions. Student are not required to provide online responses the week they submit a Discussion Leader article, however, all extra responses will be applied as extra credit.

**Response posts are due on designated Sunday evenings by 11:59 pm (EST).**

### Grading Rubric: Online Discussion Responses

Components	Expected Level of Competence	Moving Towards Expected Level of Competence	Below Expected Level of Competence
<b>Quantity &amp; timeliness of contributions</b>	Reads the messages in the discussion area. Contributes 5 constructive responses to discussion post over the entire course.	Reads some of the messages in the discussion area. Contributes 2-4 constructive responses to discussion posts over the entire course.	Does not read messages in discussion area and does not contribute any constructive responses to discussion posts over the course of the semester.
<b>Quality &amp; relevance of response</b>	Responses are concise, clear, and thoughtful. Responses contribute something original or build upon what has been said; they are not repetitious.	Responses are related to the discussion posts, but messages only address peripheral issues. Repetition of questions or points made by others.	Responses do not relate to the discussion posts. Makes, short, irrelevant remarks or responds with minimum effort.
<b>Interaction with others</b>	Questions are raised to stimulate discussion. Encourages a variety of viewpoints. Responds to questions and comments from others. When disagreeing, does so respectfully.	Participation is evident, but posts do not involve others or encourage others to think critically.	Rarely raises questions to stimulate discussion and rarely responds to the questions and comments raised by others. Comments are unconstructive or non-courteous.

**Final Exam:** The final exam will assess mastery of specific content relevant to material presented during the course. It will be a two-hour timed exam during the last week of the course. Questions will be in the form of multiple choice, short answer, fill in the blank, long answer, and true/false questions. This exam will be administered through Canvas and will require computer and internet access in order to be completed. Students should ensure they have reliable access to a computer and the internet during the final exam week. If, for some reason, you need scheduling accommodations for the final exam please email the instructors as soon as you are aware of any issues, and no later than the end of Week 6 of the course.

**Assignments and Submission Instructions:** All homework assignments should be uploaded to Canvas in your assignment dropbox by the specified deadline. Online Discussion Leader articles and responses are to be posted to the class Discussion forum on Canvas. Assignments received after their deadline will not be accepted or graded unless an extension is approved in advance of the due date. Students who are unable to complete an assignment or exam on time for any reason should notify either Rob or Natalie by email as soon as possible, and at least 48 hours prior to the deadline, with a brief explanation for why the extension is needed. Deadlines for each assignment are listed in the Course Calendar below.

## COURSE CALENDAR

Note: This schedule is subject to modification at the discretion of the instructors

Dates	Week	Topic	ASSIGNMENTS & ACTIVITIES	ASSIGNMENT DUE DATES	LECTURER and/or GUEST SPEAKER
1/18 - 1/21	1	Introduction to course and overview of Food System and Markets	Readings	Introductions: Post in Discussion Forum by 1/21 at 11:59pm EST	Rob Guillemín
1/22 - 1/28	2	Crop and Food Animal Production	Readings and Online Discussion #1	Article: 1/25 at 11:59pm EST Response: 1/28, 11:59pm EST	Rob Guillemín
1/29 - 2/4	3	Environmental and Public Health Effects	Readings and Quiz #1	Quiz answers: 2/4, 11:59pm EST	Natalie Valpiani
2/5 - 2/11	4	Food Environment, Food Access, and Nutrition	Readings and Online Discussion #2	Article: 2/8, 11:59pm EST Response: 2/11, 11:59pm EST	Natalie Valpiani Jen Obadia
2/12 - 2/18	5	Food Distribution and Transport	Readings and Quiz #2	Quiz answers: 2/18, 11:59pm EST	Rob Guillemín
2/19 - 2/25	6	Food Processing and Packaging	Readings and Online Discussion post #3	Article: 2/22, 11:59pm EST Response: 2/25, 11:59pm EST	Rob Guillemín
2/26 - 3/4	7	Regional Food Hubs and Food Security	Readings and Quiz #3	Quiz answers: 3/4 11:59pm EST	Natalie Valpiani
3/5 - 3/11	8	Supermarkets and Alternative Retail Formats	Readings and Online Discussion #4	Article: 3/8, 11:59pm EST Response: 3/11, 11:59pm EST	Rob Guillemín
3/12 - 3/18	9	Direct to Consumer	Readings and Quiz #4	Quiz answers: 3/18, 11:59pm EST	Natalie Valpiani
3/19 - 3/25	10	Restaurants	Readings	None	Rob Guillemín
3/26 - 4/1	11	Farm to Institutions	Readings and Online Discussion #5	Article: 3/29, 11:59pm EST Response: 4/1, 11:59pm EST	Jen Obadia
4/2 - 4/8	12	Waste in the Food System	Readings and Quiz #5	Quiz answers: 4/8, 11:59pm EST	Jen Obadia
4/9 - 4/15	13	Policies that Shape the Food System	Readings	None	Rob Guillemín Natalie Valpiani
4/16 - 4/22	14	Review and Final Exam	Final Exam	Posted on Monday 4/16 at 9:00am EST. Due Sunday 4/22 at 11:59pm EST	Rob Guillemín

**Accommodation of Disabilities:** Students with documented disabilities are entitled to reasonable academic accommodation appropriate to their needs. If you require accommodations for this course, contact Rob or Natalie confidentially prior to the end of the second week of classes.

NUTR-C262  
**Sustainable Food Supply Chain and Markets**  
**Spring 2017**

## **Introduction**

### **Week 1: Introduction and Overview of Food System and Markets**

Welcome to NUTC-262, Sustainable Food Systems and Markets! This week's lectures, reading/viewing materials, and assignment will introduce you to the course, to the concept of a sustainable food system, and to each other. The introductory lecture will provide an overview of the syllabus, course topics, and expectations.

#### **Assignment:**

Introduce yourself in the discussion forum by 11:59 p.m. EST on 1/21.

#### **Learning Objectives**

- Review the requirements of the course from start to finish.
- Explore the definition of a “sustainable food system” and offer useful perspectives that clarify its meaning.
- Discuss why the industrial “middle of the food system” is relevant to sustainability.
- Provide a broad overview of the US food system, including its elements, characteristics and relationships.
- Explain a “systems” approach to understanding the food system.
- Examine how the food system embodies complexities that are characterized by the term “wicked problems.”
- Identify how to gauge the level of a company’s sustainability commitment.
- Review the regulatory underpinnings of the industrial food system.

#### **Lectures**

- Course Introduction - Guillemin (5:47)
- Defining Sustainable Food Systems (SFS) - Guillemin (8:12)
- Why the Middle of the Food System Matters - Guillemin (7:40)
- Wicked Problems and the Food System - Guillemin (4:53)
- System Thinking Approach - Guillemin (13:02)
- Assessing Sustainability Commitment in the Food Industry - Guillemin (13:17)
- Seeing What the World Eats - Guillemin (4:01)

## Required Reading and Viewing

### Food System Insights

- *Introduction to the U.S. Food System*, Chapter 1: Food Systems
- Emily Brooks, *The Ultimate Confusion: Defining Sustainable Agriculture*, New Sustainability Inc. blog, January 18, 2014:  
[https://docs.google.com/document/d/1eak-H\\_LvyvBHyRU29jkc-SVBovVelsWD-k0756pV9cM/edit?usp=sharing](https://docs.google.com/document/d/1eak-H_LvyvBHyRU29jkc-SVBovVelsWD-k0756pV9cM/edit?usp=sharing)
- Video: Food by the Numbers: Feeding Our Hungry Planet, National Geographic (1:42):  
<http://video.nationalgeographic.com/video/food-by-the-numbers/141014-world-food-day-ngfood?source=relatedvideo>

### Food Regulations

- Video: The History of Food Regulations (5:06):  
<https://www.youtube.com/watch?v=1y-VeZ2YPYI>

### Sustainable Business Reporting Methods and Management Systems

- Video: Bob Massie: Measuring Sustainability Disclosure (Global Reporting Initiative) (3:30): <https://www.youtube.com/watch?v=aVMqD4CKL50>
- Video: ISO 14000 - Environmental management (4:29):  
[https://www.youtube.com/embed/\\_hs54V3x1VQ?fs=1&autoplay=1&rel=0](https://www.youtube.com/embed/_hs54V3x1VQ?fs=1&autoplay=1&rel=0)
- Introduction to ISO 1400:2015: [http://www.iso.org/iso/introduction\\_to\\_iso\\_14001.pdf](http://www.iso.org/iso/introduction_to_iso_14001.pdf)
- Global Reporting Initiative Standards: <https://www.globalreporting.org/standards>

## Supplementary Material

- How to Start a Food Business,  
<http://www.fda.gov/Food/ResourcesForYou/Industry/ucm322302.htm>
- EPA Regulations for the Food Processing Sector (NAICS 311):  
<https://www.epa.gov/regulatory-information-sector/food-processing-sector-naics-311>

## Understanding the Dominant Food System

### Week 2: Crop and Food Animal Production

This week focuses on the foundational topic of food production, including the long history of agriculture, the transition to industrial food production, and the merits of alternative agriculture approaches.

## Assignment

Please visit the **Discussions** tab in Canvas:

Discussion Leader Article, due 11:59 p.m. EST on 1/25.

Discussion Responses, due 11:59 p.m. EST on 1/28.

## Learning Objectives

- Provide a historical context to the modern food system by describing the rise of agriculture and the associated trends in food production and population.
- Describe the shift from traditional farming and animal production to industrial practices.
- Examine the factors that drove the industrialization of food production and the resulting environmental and social tradeoffs.
- Describe alternative farming practices that seek to establish a sustainable food system, including organic food production, agroecology, and local farming.
- Review the debates regarding the advantages and challenges of organic and local food.

## Lectures

- Agriculture and the Dawn of Civilization - Guillemain (4:01)
- Cycles of Boom and Bust - Guillemain (9:08)
- Industrialization of the Food System - Guillemain (8:35)
- Alternative Farming: Agroecology and Organic Farming - Guillemain (11:29)
- Alternative Farming: Local and Regional Markets - Guillemain (6:32)

## Required Reading and Viewing

- *Introduction to the U.S. Food System*, Chapter 11: Crop Production and Food Systems
- *Introduction to the U.S. Food System*, Chapter 12: Food Animal Production
- Video: Crash Course: The Agricultural Revolution (11:10):  
[https://www.youtube.com/watch?v=Yocja\\_N5s1I](https://www.youtube.com/watch?v=Yocja_N5s1I)
- "Food Politics: What Everyone Needs to Know" by Robert Paarlberg. Chapter 12: Organic and Local Food (p.139-153):  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rVUZKaVp5VzVwLUFuZfk4ZXdiTzhreHZuWDRj>
- Can agroecology feed the world and save the planet?, The Guardian, October 9 2016 04, by Henrietta Moore (p. 1-2):  
<https://www.theguardian.com/global-development-professionals-network/2016/oct/09/agroecological-farming-feed-world-africa>

### **Supplementary Material**

- Christian Peters, Lead Author (July, 2016). Carrying capacity of U.S. agricultural land: Ten diet scenarios. *Elementa: Science of the Anthropocene*. Note: Focus on the Introduction, Results and Conclusion sections. <https://elementascience.org/articles/116>
- Organic growers begin to close the gap with conventional farming (December 16, 2014). E&E Publishing (p. 1-2). [http://nature.berkeley.edu/kremenlab/wp-content/uploads/2015/01/AGRICULTURE\\_-Organic-growers-begin-to-close-the-gap-with-conventional-farming-Tuesday-December-16-2014-www.eenews.pdf](http://nature.berkeley.edu/kremenlab/wp-content/uploads/2015/01/AGRICULTURE_-Organic-growers-begin-to-close-the-gap-with-conventional-farming-Tuesday-December-16-2014-www.eenews.pdf)

### **Week 3: Environmental and Public Health Effects of Predominant Diet and Production System**

This week, we will examine the health and environmental effects of the average American diet and the production systems that make it accessible and affordable.

### **Assignment**

Quiz #1: Please visit the **Quizzes** tab in Canvas and complete Quiz #1 by 11:59 EST on 2/4.

### **Learning Objectives**

- Describe food intakes and eating patterns in the United States and major trends in the intake since the 1970s.
- Describe the major diet-related conditions and their health and economic impacts.
- Understand why food production capacity depends on ecological integrity.
- Describe how food systems have impacted the status of land, oceans, freshwater, genetic diversity, energy resources and ecosystem services.
- Describe some of the occupational and environmental health risks associated with food and agricultural industries.

### **Lectures**

- What We Eat in America - Valpiani (11:10)
- Public Health Burden of Diet-Related Disease - Valpiani (9:49)
- Human Health Impacts of Industrial Agriculture - Valpiani (15:33)
- Environmental Impacts of Industrial Agriculture - Valpiani (10:52)
- Measuring Environmental Impact: Life-cycle assessment - Valpiani (7:26)

### **Required Reading and Viewing**

- *Introduction to the U.S. Food System*, Chapter 2: Food System Public Health Effects

- U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Available at: <https://health.gov/dietaryguidelines/2015/guidelines/>.
  - Chapter 1: Key Elements of Healthy Eating Patterns (Skim)
  - Chapter 2: Shifts Needed to Align With Healthy Eating Patterns
- IPES-Food. 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. International Panel of Experts on Sustainable Food systems. [http://www.ipes-food.org/images/Reports/UniformityToDiversity\\_FullReport.pdf](http://www.ipes-food.org/images/Reports/UniformityToDiversity_FullReport.pdf)
  - Skim Section 1, Reads Sections 2 & 3.
- Heller, M., Keoleian, G., and Willett, W. Toward a Life Cycle-Based, Diet-level Framework for Food Environmental Impact and Nutritional Quality Assessment: A Critical Review. Environ. Sci. Technol., 2013, 47 (22): 12632-12647.
- Video: U.S. Department of Agriculture. Climate Change, Global Food Security and the U.S. Food System. [http://www.usda.gov/oce/climate\\_change/FoodSecurity.htm](http://www.usda.gov/oce/climate_change/FoodSecurity.htm).

### **Supplementary Material**

- Video: BBC Documentary by Rebecca Hoskins (2009). A Farm for the Future (48 minutes): (<https://vimeo.com/136857929>)
- U.S. Department of Agriculture. Climate Change, Global Food Security and the U.S. Food System. December 2015. Available at: [http://www.usda.gov/oce/climate\\_change/FoodSecurity2015Assessment/FullAssessment.pdf](http://www.usda.gov/oce/climate_change/FoodSecurity2015Assessment/FullAssessment.pdf)

### **Week 4: Food Environment, Food Access, and Nutrition in the U.S.**

This week, we explore associations between the food environment and the dietary intake of Americans. We will consider components of the food environment such as marketing and the built environment (i.e. store or restaurant access). We will also identify barriers to food access and their consequences.

### **Assignment**

Discussion Leader Article, due 11:59 p.m. EST on 2/8.

Discussion Responses, due 11:59 p.m. EST on 2/11.

### **Learning Objectives**

- Use the social ecological model as a framework for understanding drivers of health behaviors and for planning food system interventions that promote health.
- Describe factors that drive food choice at each level of the social-ecological model.

- Understand associations between food marketing and Americans' dietary habits.
- Define food insecurity, identify programs aimed at addressing it.
- Explain associations between food access and diet-related disease.
- Provide examples of policies and programs that aim to improve food access.

### Lectures

- The Food Environment - Valpiani (6:22)
- Food Retail Store Access - Valpiani (19:42)
- Food Insecurity in the United States - Valpiani (13:29)
- Healthy Food Access Strategies - Obadia (35:14)

### Required Reading and Viewing

- *Introduction to the U.S. Food System*, Chapter 17: Healthy Food Environments
- Coleman-Jensen, Alisha, Matthew P. Rabbitt, Christian A. Gregory, and Anita Singh. (2016). Household Food Security in the United States in 2015, ERR-215, U.S. Department of Agriculture, Economic Research Service, September 2016. <https://www.ers.usda.gov/webdocs/publications/err215/err-215.pdf?v=42636>
  - **Read Pages 2-11**
- U.S. Department of Agriculture. (2009). Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences. U.S. Department of Agriculture. Economic Research Service.
  - Chapter 2. The Extent of Limited Food Access in the United States
  - Chapter 4. Food Access and its Relationship to Diet and Health Outcomes
- Michael Moss (2014). Salt, Sugar, Fat: How the Food Giants Hooked Us.
  - Chapters 1. Exploiting the Biology of the Child
  - Chapter 2. How Do You Get People to Crave?
  - Chapter 11. No Sugar, No Fat, No Sales

### Supplementary Material

- Olsho, L., Klerman J., Wilde P., and Bartlett S. (2016). Financial Incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot. *Am J Clin Nutr.* 104: 2, 423-435.
- Caspi, C. Sorensen, G., Subramanian, S.V., Kawachi, I. (2012). The local food environment and diet: A systematic review. *Health & Place.* 18: 5, 1172-1187.
- Ver Ploeg, Michele and Ilya Rahkovsky. (2016). Recent Evidence on the Effects of Food Store Access on Food Choice and Diet Quality. Last Accessed December 2016. Available at:

<https://www.ers.usda.gov/amber-waves/2016/may/recent-evidence-on-the-effects-of-food-store-access-on-food-choice-and-diet-quality/>

## **Food Manufacturing and Distribution**

### **Week 5: Food Distribution and Transport**

For this week, we study the distribution and transportation of food by exploring the history of freight transportation and food refrigeration. We also discuss the link between transportation and the emission of greenhouse gases and ozone depleting substances. Finally, we touch upon programs designed to improve the environmental performance of freight transportation.

#### **Assignment:**

Quiz #2, due at 11:59 p.m. EST on 2/18.

#### **Learning Objectives**

- Provide a historical context to the modern food transportation and refrigeration systems.
- Describe the business categories that create, transform, and deliver food to consumers, including the prime food distribution channels.
- Explain the strengths, limitations, and misconceptions related to food distribution at the local, regional, national and international scale.
- Review the environmental impact of food transport, including climate change and ozone depletion.
- Describe leading programs and initiatives designed to address the environmental impacts of distribution, transportation and refrigeration.

#### **Lectures**

- Food and Transportation - Guillemín (12:08)
- Why food is transported - Guillemín (7:36)
- Food Distribution Channels - Guillemín (12:55)
- Local and Regional Food Distribution - Guillemín (10:46)
- EPA SmartWay Program - Guillemín (12:07)
- History of Refrigeration and Food (1800s) - Guillemín (5:42)
- History of Refrigeration and Food (1900s) - Guillemín (6:09)
- Refrigeration and Environmental Impacts - Guillemín (11:06)

## Required Reading and Viewing

### Transportation

- *Introduction to the U.S. Food System*, Chapter 14: Food Distribution
- "The Conundrum: How Scientific Innovation, Increased Efficiency, and Good Intentions Can Make Our Energy and Climate Problems Worse" by David Owen. Chapter 12: Let Them Eat Kale (p. 70-79):  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rNVYydzNnX0hKZ290OFJ5bHVDN29UQjluSGxr>
- The State of Sustainable Supply Chains: Building Responsible and Resilient Supply Chains by Ernst and Young and United Nations Global Compact (6017). Read the Executive Summary (p. 4-9) and the Maturity Matrix (p. 31)  
[https://www.unglobalcompact.org/docs/issues\\_doc/supply\\_chain/state-of-sustainable-supply-chains.pdf](https://www.unglobalcompact.org/docs/issues_doc/supply_chain/state-of-sustainable-supply-chains.pdf)
- Video: U.S. Railroad History Map 1830 - 1990s (2:40):  
<https://www.youtube.com/watch?v=a8lX5A2q-Eo>
- Video: History of Food Distribution (3:26):  
<https://www.youtube.com/watch?v=Qxw8AHlkGAY>
- Video: Roadtrip Follows Strawberrys Across America, National Geographics (1:48):  
<http://video.nationalgeographic.com/video/magazine/food-by-the-numbers/141015-ngm-berry-road-trip?source=searchvideo>. Note: Please excuse the ad that precedes the video).
- Future of Logistics: Five Technologies That Will Self-Orchestrate The Supply Chain, Forbes:  
<http://www.forbes.com/sites/sarwantsingh/2016/09/22/future-of-logistics-5-technologies-that-will-self-orchestrate-the-supply-chain/#2cfccd09491a>

### Refrigeration

- Video: The Story of Frozen Food (2:40):  
[https://www.youtube.com/watch?v=uWZwncX\\_4hk](https://www.youtube.com/watch?v=uWZwncX_4hk)
- Video: How Chlorofluorocarbons Destroy Ozone (2:10):  
<https://www.youtube.com/watch?v=IniJx-vRHG0>

### Distribution Center

- Video: The Warehouse of the Future – WITRON's Order Picking Machinery (OPM) Technology at the Meijer Distribution Center in Wisconsin (4:42). Note: This promotional video does a good job of showcasing OPM technology, a future trend for large food retailers: <https://youtu.be/bn5jjVKhFUs>

## **Supplementary Materials**

- The U.S. Environmental Protection Agency's GreenChill Program:  
<https://www.epa.gov/greenchill/about-greenchill>
- The U.S. Environmental Protection Agency SmartWay Program:  
<https://www.epa.gov/smartway>
- Schwartz, H. G., Ch. 5: Transportation. Climate Change Impacts in the United States: The Third National Climate Assessment, U.S. Global Change Research Program, 130-149. doi:10.7930/J06Q1V53:  
<http://nca2014.globalchange.gov/report/sectors/transportation>

## **Week 6: Food Processing and Packaging**

For this week, we discuss the topics of food processing and packaging, two related activities that generate significant environmental impacts. The class will provide a historical context to processed foods, review technical considerations, and address pertinent environmental concerns and solutions.

### **Assignment**

Discussion Leader Article, due 11:59 p.m. EST on 2/22.

Discussion Responses, due 11:59 p.m. EST on 2/25.

### **Learning Objectives**

- Understand why foods are processed and how processing can change foods in positive and negative ways.
- Identify the four major methods of processing foods and their benefits and drawbacks.
- Understand the functions of food packages, materials used, and how packaging impacts the environment.
- Apply a historical, economic, and environmental critique to a discussion about food processing and packaging.

### **Lectures**

- The History of Food Processing and Packaging - Guillemin (10:15)
- Why Foods are Processed - Guillemin (5:00)
- Food Processing Methods - Guillemin (6:30)
- Food Packaging Materials and Methods - Guillemin (7:04)
- Packaging Waste Management Strategies - Guillemin (14:47)
- Food Processing and Environmental Impacts - Guillemin (10:05)

- Environmental Strategies for Food Processing - Guillemin (11:59)

### Required Readings and Viewings

- *Introduction to the U.S. Food System*: Chapter 13: Food Processing and Packaging.

#### Food Processing

- Evelyn Kim, Processed Food: A 2-Million-Year History, Scientific America, September 1, 2013 (p. 1-11). Note: This somewhat whimsical list of foods offers a marvelous view of the long history of human gastronomical inventiveness.  
<https://drive.google.com/open?id=0Bxo8dOyj6d9reXZVcXVTR1owNlk>
- Melanie Warner (2014). Pandora's Lunchbox: How Processed Food Took Over the American Meal. Why Bread Needs Strange Ingredients (p. 99-104): Note: If you ever wondered why food additives are so popular in processed foods, this story of breadmaking provides insight into the question..  
[https://drive.google.com/open?id=1GBqUfk\\_ZdGsHTZWQfU-9RC9xFf3\\_zQh9](https://drive.google.com/open?id=1GBqUfk_ZdGsHTZWQfU-9RC9xFf3_zQh9)
- Eric Schlosser (2012). Fast Food Nation: The Dark Side of the All-American Meal. Excerpt: "million and millions of fries" (p. 129-131). Note: This reading recounts how even the relatively simple task of making french fries can become a high-tech enterprise.  
[https://drive.google.com/open?id=1\\_ZSTjcMEGXCxqH7O\\_oE0GKgdRrtFBfJE](https://drive.google.com/open?id=1_ZSTjcMEGXCxqH7O_oE0GKgdRrtFBfJE)
- Eric Schlosser (2012). Fast Food Nation: The Dark Side of the All-American Meal. Excerpt: "The most dangerous job" (p. 169-183). Note: This description of a meat processing plant offers a memorable picture of perilous efficiency.  
<https://drive.google.com/open?id=16vDW5qWktdn5DOMDA3D9vU5cvttFbCX9>.

#### Pollution Prevention and Energy Efficiency

- Understand pollution: Environmental impacts from food in 6 charts, GreenBiz.com, by Jeff Kohn and Kelsey Kruger, November 17, 2016 (about 4-pages, including charts):  
<https://www.greenbiz.com/article/understand-pollution-environmental-impacts-food-6-charts>
- Environmental Self-Assessment for the Food Processing Industry: A Quick and Easy Checklist of Pollution Prevention Measures for the Food Processing Industry (March 2001). Note: Skim pages 1-13 to see the types of questions used to evaluate pollution prevention opportunities at food processing facilities:  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rNGVsbExqM2NsTHc>
- ERS Report Summary: Energy Use in the U.S. Food System, Economic Research Services, U.S. Department of Agriculture, March, 2010 (p. 1-2). Note: This summary provides insight into the energy consumption within the food system:  
[https://www.ers.usda.gov/webdocs/publications/46375/8143\\_err94\\_reportsummary\\_1\\_.pdf?v=41056](https://www.ers.usda.gov/webdocs/publications/46375/8143_err94_reportsummary_1_.pdf?v=41056)

### Food Packaging

- Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012, U.S EPA, New York State Department of Environmental Conservation Pollution Prevention Unit, 2014 (p. 1-13):  
[https://www.epa.gov/sites/production/files/2015-09/documents/2012\\_msw\\_fs.pdf](https://www.epa.gov/sites/production/files/2015-09/documents/2012_msw_fs.pdf)
- “Could Milk Be the Future of Food Packaging?” By Jillian Frankel, TakePart.com, August 25, 2016. (about 2-pages long including photos): Note: Particularly in the area of packaging, environmentalists hope for a technological breakthroughs that can outmatch the high utility and low cost of plastics. This article provides a possible solution:  
<http://www.takepart.com/article/2016/08/25/milk-food-package/>

### Alternative Food Processing Formats

- “Commonwealth Kitchen, Food with a Mission,” by Joshua Berman, Boston Local Food Festival, September 18, 2016.  
<http://bostonlocalfoodfestival.com/2016/08/commonwealth-kitchen-food-with-a-mission/>

### **Supplementary Materials**

- *Food Manufacturing Industry: Profile on Pollution Prevention and Other Sustainable Development Strategies*, Abt Associates (prepared for the Toxic Release Inventory Program Division, Office of Chemical Safety and Pollution Prevention, U.S. EPA), August 1, 2016:  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rMU1pNjBKT0lGUduWWhfUG5EWUNrRFXRC1N>
- Canning, P., Patrick Canning, A. Charles, S. Huang, K. R. Polenske, and A. Waters (2010): *Energy Use in the US Food System*. U.S. Department of Agriculture, Economic Service Report. Note: Read report “Summary” (p. iii-iv).  
[http://web.mit.edu/dusp/dusp\\_extension\\_unsec/reports/polenske\\_ag\\_energy.pdf](http://web.mit.edu/dusp/dusp_extension_unsec/reports/polenske_ag_energy.pdf)
- ENERGY STAR Focus on Energy Efficiency in Food Processing  
<https://www.energystar.gov/buildings/facility-owners-and-managers/industrial-plants/measure-track-and-benchmark/energy-star-energy-4>
- ENERGY STAR Focus on Energy Efficiency in Food Processing. Note: This webpage shows how the EPA Energy Star program seeks to improve energy efficiency by providing energy performance indicators for food processing companies.  
<https://www.energystar.gov/buildings/facility-owners-and-managers/industrial-plants/measure-track-and-benchmark/energy-star-energy-4>

## **Week 7: Regional Food Hubs and Food Security**

In Week 7, we explore the potential of food hubs to act as bridges from small-scale, localized producers to the large-scale, traditional grocery retail sector. We'll define food hubs, look into the services they provide, and discuss their limitations and challenges.

### **Assignment:**

Quiz #3, due at 11:59 p.m. EST on 3/4.

### **Learning Objectives**

- Define local and regional in the context of food systems.
- Define the terms *food hub* and *community food security*; explain food hub functions.
- Explain the challenges faced by small- and mid-sized farmers in accessing markets.
- Identify strengths and weaknesses of the food hub model, as well as enabling policies or regulations.

### **Lectures**

- Regional Food Systems and Food Hubs: Definitions - Valpiani
- Food Hub Services - Valpiani
- Impacts of Food Hubs - Valpiani
- Constraints on and Limitations of Food Hubs - Valpiani
- Policies and Programs in Support of Food Hubs - Valpiani
- Case Study: Fair Acre Traders - Nyquist

### **Required Readings and Viewings**

- *Introduction to the U.S. Food System*, Chapter 6: Community Food Security
- Barham, James, Debra Tropp, Kathleen Enterline, Jeff Farbman, John Fisk, and Stacia Kiraly (2012). Regional Food Hub Resource Guide. U.S. Dept. of Agriculture, Agricultural Marketing Service. Washington, DC.. Available at: <https://www.ams.usda.gov/sites/default/files/media/Regional%20Food%20Hub%20Resource%20Guide.pdf>
  - Read pages 1 - 29; Skim rest of document according to interest
- Feenstra, G. and Hardesty, S. (2016). Values-Based Supply Chain as a Strategy for Supporting Small and Mid-Scale Producers in the United States. *Agriculture*. 6: 39. <http://www.mdpi.com/2077-0472/6/3/39/pdf>
- Fischer, M., Pirog, R., and Hamm, M. (2015). Predictors of Food Hub Financial Viability. *J Hunger Environ Nutr*. 10:1; 100 - 114.

### **Supplementary Materials**

- Matson, J., Sullins, M., and Cook, C. (2013). The role of food hubs in local food marketing. U.S. Department of Agriculture, Rural Development. Report 73. Available at: <https://www.rd.usda.gov/files/sr73.pdf>
- Martinez, S. et al. (2010). Local Food Systems: Concepts, Impacts and Issues. ERR 97. U.S. Department of Agriculture, Economic Research Service.

## **Food Retail Venues**

### **Week 8: Supermarkets**

In week 8, we explore food retail stores, including their history, business practices, store formats, and operational efficiency methods. We will also review sustainable sourcing strategies, including third-party product certification programs and the danger of greenwashing.

### **Assignment**

Discussion Leader Article, due 11:59 p.m. EST on 3/8.

Discussion Responses, due 11:59 p.m. EST on 3/11.

### **Learning Objectives**

- Recount the history of food retailers in the US from the early 19th century to the present.
- Explain the economics of the food retail sector and its different store formats.
- Review how to improve store operational efficiency to reduce energy, waste management and refrigerant costs.
- Review alternative food retail formats, including food co-ops and zero-waste stores.
- Explore sustainable sourcing approaches and third-party certification programs that allow retailers to feature sustainable and ethical products.

### **Lectures**

- History of U.S. Food Retail (1890s to 1940s) - Guillemín
- History of U.S. Food Retail (1950s to Present) - Guillemín
- Food Retail Business - Guillemín (13:18)
- Food Retail Store Formats - Guillemín (12:59)
- Supermarket Operational Efficiency Strategies - Guillemín

## Required Readings and Viewings

### Business Efficiency

- Chkanikova, O., Mont, O. (2011). *Overview of sustainability initiatives in European food retail sector*, Working Paper, The International Institute for Industrial Environmental Economics (p. 1-36). Note: Concentrate on business Trends and Drivers (pages 3-6) and Landscape of Sustainability Initiatives (pages 28-36). To see the range of sustainable activities employed by grocery stores, skim pages 7-27:  
<https://lup.lub.lu.se/search/publication/2364054>
- *Environmental Practices Inventory: A Survey of Minnesota Grocers*, Minnesota Pollution Control Agency, 2009 (p. 1-22). Note: This survey measures the level of store engagement for multiple sustainability activities:  
<https://drive.google.com/file/d/1oVWQhxonHwqotLWcNKx-4j7AvoFTyBIU/view?usp=sharing>
- *Sustainability Quick Start Guide*, Food Marketing Institute (p. 1-14). Note: Skim this document to see a range of sustainable activities for grocery stores.  
<https://docs.google.com/document/d/1aZckHKlyLNetSTKZrGiH3wNEzUcP3LFb93RrsA5vduA/edit?usp=sharing>

### Product Claims and Labels

- ISSA Video “Seven Sins of Greenwashing” by Scot Case, January 31, 2012 (3:37). Note: While this presentation does not focus specifically on food, its greenwashing concepts apply to food marketing labels and claims. <https://youtu.be/9jJ6YH2H1xU>
- Video: Canadian Broadcasting Corporation (Feb. 13, 2017). Healthy or junk food? (22:25). Note: This investigative report evaluates nutritional claims for food products: [https://www.youtube.com/watch?v=kUKOt\\_SvTQc](https://www.youtube.com/watch?v=kUKOt_SvTQc)
- *Sustainable Sourcing Guide for High Impact Commodities*, Food Marketing Institute, 2010 (p. 1-11). Note: This guide lists concerns and certification labels for seven high impact commodities, sugarcane, cocoa, paper/pulp, coffee, soy, palm oil and beef: <https://drive.google.com/open?id=0Bxo8dOyj6d9rNGl4aUpOUTdMMGs>
- EcoLabel Index: This online resource is the largest global directory of ecolabels, tracking 465 ecolabels in 25 industry sectors: <http://www.ecolabelindex.com/>

### Alternative Store Formats

- Video: History of co-ops in England (4:50). Note: This video discusses the oldest of alternative formats for grocery stores - food co-ops:  
<http://strongertogether.coop/food-coops/history-of-co-ops/>
- Emma Paling, Huffington Post - Canada (3/17/16). “Zero-Waste Supermarket Coming To Vancouver”:  
[http://www.huffingtonpost.ca/2016/03/17/zero-waste-market-vancouv\\_n\\_9486548.html](http://www.huffingtonpost.ca/2016/03/17/zero-waste-market-vancouv_n_9486548.html)

- Janelle Nanos (MAY 13, 2016), Boston Globe. *Daily Table is on a mission to stop food waste and feed the hungry*. Note: This story is about a nonprofit store that transforms donated food into healthy, affordable meals.  
<https://docs.google.com/document/d/1e-R3WlohO8uZBHbLCfGbpJjs5DBZWNyn82sg1iX6bCU/edit?usp=sharing>

### Supplementary Materials

- *Carbon Footprinting 101: A Guide for Food Retailers*, Food Marketing Institute, 2009 (p. 1-24). Note: This report describes how to measure and set goals for greenhouse gas-management strategies.  
[https://drive.google.com/file/d/17DzYjMvMX-U0t\\_TwtdTsU-Kv4ola-yWk/view?usp=sharing](https://drive.google.com/file/d/17DzYjMvMX-U0t_TwtdTsU-Kv4ola-yWk/view?usp=sharing)
- *Sustainability on the Shelves: A Guide for Category Managers*, Food Marketing Institute, September 30, 2010, (p. 1-37). Note: This document provides a life-cycle perspective to evaluate the environmental impact of products:  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rQnk3eWJWOWFETDQ>
- *Making a Business Case for Sustainability: A Guide for Sustainability Leaders*, Food Marketing Institute, April, 2014 (p. 1-33). Note: This report offers an inside look at how sustainability managers promote their projects to upper management:  
<https://drive.google.com/open?id=0Bxo8dOyj6d9rcmJnN2I5bzI3S3M>
- Bepakt. Searchable list of zero-waste grocery stores around the world: <http://bepakt.com/>
- Retail Industry Leadership Association (2016). Sustainability Maturity Matrix (p. 1-8). Note: This online tool helps sustainability executives direct business operations towards continuous improvement.  
<https://www.rila.org/sustainability/Documents/Sustainability%20Maturity%20Matrix/2015%20RILA%20Sustainability%20Management%20Maturity%20Matrix.pdf>

### Week 9: Direct to Consumer

In Week 9, we consider the potential of direct producer-to-consumer food sales to benefit farmer incomes, consumer health, and the environment.

#### **Assignment:**

Quiz #4, due at 11:59 p.m. EST on 3/18.

#### **Learning Objectives**

- Review trends in U.S. local and regional direct-to-consumer sales.
- Explore the effect of direct-to-consumer sales on the sustainability of food production.
- Assess the economic impact of direct sales to farmer income and local economies.
- Consider evidence for the effect of direct-to-consumer sales on Americans' health.

- Discuss whether or not “local food” should be scaled up; identify barriers to doing so.

## Lectures

- Direct-to-Consumer Sales: An Overview - Valpiani
  - Prevalence, formats, customer motivations, policies
- Economic and Environmental Impacts of Direct-to-Consumer Sales - Valpiani
- Health Impacts of Direct-to-Consumer Food Sales - Valpiani
- Scaling up: Barriers and Potential - Valpiani

## Required Readings and Viewings

- Low, S.A.; Adaljia, A.; Beaulieu, E.; Key, N.; Martinez, S.; Melton, A.; Perez, A.; Ralston, K.; Stewart, H.; Suttles, S.; Vogel, S.; and Jablonski, B. (2015). [Trends in U.S. Local and Regional Food Systems](#). U.S. Department of Agriculture, Economic Research Service.
- Weber, C.; Matthews, H.S. (2008). Food-Miles and the Relative Climate Impacts of Food Choices in the United States. *Environ. Sci. Technol.* 42 (10), pp 3508–3513.
- Angie Vasquez, A.; Sherwood, N.; Larson, N.; Story, M. (2017). Community-Supported Agriculture as a Dietary and Health Improvement Strategy: A Narrative Review. *J. Acad Nutr Diet.* 117, 1: 83-94.
- Nost, E. (2014). Scaling-up local foods: Commodity practice in community supported agriculture (CSA). *J Rur Stud.* 34; 152-160.

## Supplementary Materials

- Project for Public Spaces. (2007). [Estimating the economic impact of public markets](#). The Project for Public Spaces. New York, NY.
- Website: *Community Supported Agriculture (CSA)*, U.S. Department of Agriculture. <https://www.nal.usda.gov/afsic/community-supported-agriculture>
- Jilcott Pitts S.B.; Gustafson A.; Wu Q.; Leah Mayo M.; Ward R.K.; McGuirt J.T.; Rafferty A.P.; Lancaster M.F.; Evenson K.R.; Keyserling T.C.; Ammerman A.S. (2014). Farmers' market use is associated with fruit and vegetable consumption in diverse southern rural communities. *Nutr J.* 13:1.

## Week 10: Restaurants

In week 10, we discuss food service providers, beginning with the historical and contemporary development of the “restaurant” format and overarching economic trends. Then we focus on sustainable business practices and programs, and underlying social justice concerns.

## Assignment

None (Spring Break)

## Learning Objectives

- Explain the history of food service providers, from 19th century Parisian “restaurants” to the advent of fast food in America.
- Review the various restaurant formats and their target audiences.
- Describe the economic and demographic trends that have led to the increased popularity of out-of-home dining experiences.
- Highlight the corporate social responsibility (CSR) initiatives and “green” restaurant trends.
- Explore the topic of worker rights and the connection between food justice and the Slow Food Movement.

## Lectures

- History of Restaurants - Guillemin (16:16)
- Advent of the McDonald’s Business Model. Excerpts from the film “The Founder” - Guillemin
- Restaurants Formats - Guillemin (5:45)
- Food Service Economics - Guillemin (10:19)
- Sustainable Operations for Restaurants - Guillemin (7:47)
- Sustainable Restaurant Recognition and Certification Programs - Guillemin

## Required Readings and Viewings

### Business Efficiency

- Video: National Restaurant Association (February, 2017). “How to save money, and green your restaurant, in 9 easy steps” (4:51). <https://youtu.be/IM0NJqlyJis>
- Josh Prigge (December 15, 2017). “Time to Fire Up Restaurant Sustainability – Here’s How” *Environmental Leader* (p. 1-6). Note: This article presents sustainability strategies for restaurants, including the underlying managerial practices that form a strong program. [https://docs.google.com/document/d/1tbPkXdHXBkWKraPpO22EkzQdEOiHJXPEM2pt\\_r5bt2Uk/edit?usp=sharing](https://docs.google.com/document/d/1tbPkXdHXBkWKraPpO22EkzQdEOiHJXPEM2pt_r5bt2Uk/edit?usp=sharing)
- National Restaurant Association (2013). *Shedding Light on Sustainability* (p. 1-15). Note: Read pages 3-5 of this document to see how the largest restaurant trade association promotes sustainability. Skim the following pages, which focus on specific efficiency programs. [https://conserve.restaurant.org/Downloads/2013\\_Sustainability\\_Report\\_Final.aspx](https://conserve.restaurant.org/Downloads/2013_Sustainability_Report_Final.aspx)

### Innovative Restaurant Formats

- Video: Brian McGinn (April 22, 2015). “A Sustainable Chef,” New York Times (4:55). Note: This short documentary explains why one world-class chef overhauled his menu to emphasize sustainable ingredients.  
<http://www.nytimes.com/video/opinion/100000003643167/a-sustainable-chef.html?action=click&contentCollection=opinion&module=lede&region=caption&pgtype=article>
- Tanya Timmers (March 22, 2016). “7 cool ways restaurants are going sustainable” (p. 1-4). Note: This article summarizes several trends.  
[https://docs.google.com/document/d/1snDB0l3JcIweIQ7\\_kg5L883c7A4DPBskSV7Hc4ZXSo8/edit?usp=sharing](https://docs.google.com/document/d/1snDB0l3JcIweIQ7_kg5L883c7A4DPBskSV7Hc4ZXSo8/edit?usp=sharing)

### Worker Rights

- Saru Jayaraman (2013). *Behind the Kitchen Door*. Chapter 2: Real Sustainability, Please! (p. 19-32). Note: This chapter explores the issue of workplace fairness and equity among restaurant workers, including staff at high end establishments featuring organic, local, and “slow food” menus.  
[https://drive.google.com/open?id=1t21mACdZu\\_pDVk4x3qov-fNTYIE\\_MIXd](https://drive.google.com/open?id=1t21mACdZu_pDVk4x3qov-fNTYIE_MIXd)

### **Supplementary materials**

- The National Restaurant Association’s Conserve Program. Note: Puruse this website to see the latest from the NRA’s sustainability program “ConServe.”  
<http://www.restaurant.org/Industry-Impact/Conservation>
- The Sustainable Restaurant Association (RSA). Note: View this site to learn about Europe’s leading sustainability certification program. <http://www.thesra.org/>
- The Green Restaurant Association. Note: View this site to learn about the most established sustainability certification program for restaurants in the U.S.  
<http://www.dinegreen.com/>

### **Week 11: Institutional Food Service Providers**

In week 11, we examine institutional food service providers and the food management service companies that run institutional food operations, with focus on sustainable opportunities pursued corporations and communities.

### **Assignment**

Discussion Leader Article, due 11:59 p.m. EST on 3/29.

Discussion Responses, due 11:59 p.m. EST on 4/1.

## Learning Objectives

- Review the types of institutional food service providers.
- Discuss the role of food service management companies.
- Explain the challenges and opportunities for institutions to purchase more sustainable products.
- Provide examples of initiatives that improve food sustainability and social justice at institutions.
- Showcase the Corporate Social Responsibility (CSR) efforts of a major food management company.

## Lectures

- Farm to institution overview - Jen Obadia, guest lecturer (20 minutes)
- Food service management companies - Jen Obadia, guest lecturer (29 minutes)

## Required Readings and Viewings

### Overview

- Madeleine Pullman and Wu Zhaohui (2012). *Food Supply Chain Management: Economic, Social and Environmental Perspectives*; Chapter 7: Food Service (p. 160-182). Note: Concentrate on institutional food operations and food management companies (p. 165-178):  
<https://drive.google.com/open?id=1okEgyD24pP3dZhVuBOyup8pmV0xXcfJC>

### Institutions

- U.S. Department of Health and Human Services (2017). *Food Service Guidelines for Federal Facilities*, 2017 (p. 1-30). Note: Skim this document to identify standards for nutrition, community development, facility efficiency, environmental support, and safety.  
<https://drive.google.com/open?id=1CSQy4WDB99E1enB8U95j2SVLloWcpT7W>
- Benefits of a Farm to School Program (p. 1-2).  
<https://drive.google.com/file/d/1MrLeOjmRr3-p5khLz2ZdsWpQ3NGvt2Mg/view?usp=sharing>
- Tanya Denckla Cobb (2011). *Reclaiming Our Food System: How the Grassroots Food Movement Is Changing the Way We Eat*
  - Making Sustainability a Campus Issue (p. 161-164).  
<https://drive.google.com/open?id=1Ex8PrBAJBbBUQAbkPtHwWjJMO5o5ujYq>
  - Nourishing Kids by Connecting Farms and Schools (p. 146-149):  
[https://drive.google.com/open?id=1zH5o-UV5PIx1RKqGTciIV\\_Ww4ykKRdoz](https://drive.google.com/open?id=1zH5o-UV5PIx1RKqGTciIV_Ww4ykKRdoz)
- Video: Ann Cooper, TED Talk. *School Lunches*, 2007 (19:37).  
<https://youtu.be/QSTZ6AdQdwk>

- Video: Jamie Oliver, TED Talk.. *Teach Every Kid About Food*, 2010 (21:53). [https://www.ted.com/talks/jamie\\_oliver?utm\\_campaign=tedspread--a&utm\\_medium=referral&utm\\_source=tedcomshare](https://www.ted.com/talks/jamie_oliver?utm_campaign=tedspread--a&utm_medium=referral&utm_source=tedcomshare)
- Video: Zagat Documentaries, Episode 38 (May 12, 2017). Meet the Inmates of Fife and Drum, a Restaurant Redefining Prison Food (7:43): <https://youtu.be/ZwwVzoHI4yc>

### Food Management Companies

- Video: Compass Group USA 2017 CSR Video (3:23): <https://youtu.be/35jSDW6Cffk>
- Compass Group USA (2017). Our Story: Corporate Social Responsibility - 2017 (p. 1-90). Note: This online report features big pictures and light on text but it covers a wide range of issues from local food and recycling to animal welfare and food waste. <http://www.compass-usa.com/2017-corporate-social-responsibility-report/>

### **Supplementary Materials**

- U.S. Department of Agriculture (2011), *Farm to Institution*, a collection of case studies. <http://www.usda.gov/documents/6-Farmtoinstitution.pdf>
- Look up statistics for farm to school in your own state at: <https://farmtoschoolcensus.fns.usda.gov/>

## **Sustainable Food System Issues and Policy**

### **Week 12: Waste in the Food System**

In Week 12, we explore the topic of food waste, including why it matters, how much there is, and strategies to address the problem.

#### **Assignment:**

Quiz #5, due at 11:59 p.m. EST on 4/8.

#### **Learning Objectives**

- Explain the main sources of “leakage” or waste in the food system.
- Describe the environmental and social impacts of wasted food.
- Provide examples of the ways in which gleaned food is reallocated.
- Provide examples of technologies, programs and policies designed to prevent and divert waste food from landfills.

#### **Lectures**

- Food loss — Jen Obadia, guest lecturer (24 minutes)

- Quantifying food waste — Megan Lenherd, guest lecturer (17 minutes)

## Required Readings and Viewing

### Food Waste Challenges

- Gunders, D. (2012). *Wasted: How America is Losing 40 Percent of Its Food from Farm to Fork to Landfill* (p. 1-26). IP: 12-06-B. Natural Resources Defense Council. Note: This seminal document helped highlight the issue of wasted food.  
<https://drive.google.com/open?id=1rMm3EApSWEc1vzL0urlV2UG-9zq5hrEM>
- Smil, V. (2004). Improving Efficiency and Reducing Waste in Our Food System. *Environmental Sciences*. 1 (1): 17-26:  
[https://drive.google.com/open?id=1zOtkW8zgFz14xN7\\_g6XdCHRqqfyC7GVB](https://drive.google.com/open?id=1zOtkW8zgFz14xN7_g6XdCHRqqfyC7GVB)
- Video: John Oliver (2015). *Food Waste*, Last Week Tonight with John Oliver (HBO) (17:49). Note: This comedy report does a surprising good job of summarizing the problem of wasted food, including its sources and impacts:  
<https://youtu.be/i8xwLWb0ILY>

### Food Waste Solutions

- ReFed: A data-driven guide for businesses, government, funders, and nonprofits to collectively reduce food waste at scale. Visit the website [www.refed.com](http://www.refed.com) and watch the video to learn about the latest food waste reduction efforts, as outline in the “Roadmap.”
  - Video: The Roadmap to Reduce U.S. Food Waste by 20% (2:57).  
<https://youtu.be/z1X-HWPbeD4>
- Video: Fusion (2016). What You Need to Know About Food Labels (2:01).  
<https://youtu.be/rICr3kCXF6E>
- Video: Intermarche (2014). Inglorious Fruits and Vegetables (2:27). Note: This video by a French grocery chain sparked interest in rescuing misshapen fruits and vegetables. Now several chains reduce wasted food by selling “misfit” produce.  
<https://youtu.be/qQQMygivn0g>
- FoodTank (August, 2017). *12 Ways the Tech Industry is Hacking Food Waste* (August, 2017). <https://foodtank.com/news/2017/08/food-waste-technologies/>

### Supplementary Materials

- *Recycling Works: Options for Complying with the Commercial Organics Waste Ban:*  
<http://www.recyclingworksma.com/commercial-organics-waste-ban/>
- RecycleWorks Case Studies on supermarkets (text and two videos):  
<http://www.recyclingworksma.com/how-to/business-sector-guidance/supermarkets/>
- EPA’s Food Recovery Challenge:  
<https://www.epa.gov/sustainable-management-food/food-recovery-challenge-frc>

## **Week 13: Policies that Shape the US Food System**

In week 13, we discuss food policy mechanisms, drivers, and stakeholders. This includes the perspectives of food activists, government agencies, and food businesses.

### **Assignment**

None

### **Learning Objectives**

- Become familiar with a brief history of food and agriculture policy in the United States.
- Describe the process for policy proposals to become legislation and then receive federal funding.
- Appreciate the role of alliances, stakeholders, and other political factors in policy change.
- Identify ways food system policies can affect price and thus shape of the food system.
- Understand food systems policies as critical drivers of public health and health disparities.
- Explore the term “Food Politics,” including the interests and tensions between key stakeholders.
- Hear the opinions of state and local stakeholders, including a food association president and a local activist.

### **Lectures**

- Overview: Policy and Agenda Formation - Valpiani (12:06)
- Policy Nuts and Bolts: Federal Legislative Process - Valpiani (6:51)
- Policy Nuts and Bolts: Federal Appropriations Process - Valpiani (7:20)
- Policy Nuts and Bolts: Federal Rulemaking Process - Valpiani (9:59)
- Food Policy Councils - Valpiani (9:53)
- Interview with Chris Flynn, president of the Mass Food Association - Guillemín (7:40)
- Interview with Clint Richmond, Plastic Bag Ban Activist in Boston - Guillemín (12:40)

### **Required Reading and Viewing**

- *Introduction to the U.S. Food System*, Chapter 8: Policies that Shape the US Food System (p. 185-213)
- Robert Paarlberg ((2010). *Food Politics: What Everyone Needs to Know*. Chapter 1: Overview of Food Politics (p. 1-7). Note: This chapter provides a concise definition of food politics, including the tensions between rural and urban, and local and global interests and roles played by key food system stakeholders.  
[https://drive.google.com/open?id=1FEXmaFb-KKeHivLxK\\_S8wEK-gcZJZY54](https://drive.google.com/open?id=1FEXmaFb-KKeHivLxK_S8wEK-gcZJZY54)

- Marion Nestle (2013). Food Politics: How the Food Industry Influences Nutrition and Health (Tenth Anniversary Edition). Introduction: The Food Industry and "Eat More" (p. 1-28). Note: The tenth edition of this food policy classic is well documented, first-hand account of the author's encounter with how the food industry advances its interests. This chapter provides an overview the book's underlying public health concern; the food industry's drive to make people eat more:  
<https://drive.google.com/open?id=1wps0zcgofL81L0pUzZPcW4jWsVLlprLW>
- Michele Simon (2006). Appetite for Profit: How the Food Industry Undermines Our Health and How to Fight Back. Anatomy of a Food Corporation: Why We Can't Trust Them (p. 1-19). Note: Although this book was published in 2006, this introductory chapter makes claims and accusations that resonate with an activist's ideology and outrage. Consequently, it heats up the discussion around food policy:  
<https://drive.google.com/open?id=1ltglitlalGbYIxWq4i8AkquDFI0S6bBL>
- Burgan, M. and Winne, M. (2012). Doing Food Policy Councils Right: A Guide to Development and Action (p. 1-66). Note: Skim this publication for the history, roles and goals of food policy councils.  
[https://drive.google.com/open?id=1VwZHZAFyQ9bByD8qGt96OXYvTN\\_p1U-J](https://drive.google.com/open?id=1VwZHZAFyQ9bByD8qGt96OXYvTN_p1U-J)

### **Supplementary Materials**

- Broad Leib, E. (2012). [Good Laws, Good Food: Putting State Food Policy to Work for Our Communities](#). Harvard Food Law and Policy Clinic.

### **Week 14: Final Exam**

#### **Lecture**

- Review session provided via Skype for class.

#### **Learning Objectives**

- Review material presented throughout entire class.
- Test student's knowledge of material presented during the class.

#### **Required Readings and Viewings**

- None

#### **Assignments**

- Review session
- Final exam posted on Monday 4/16 at 9:00 a.m. Due Sunday 4/22 at 11:59 p.m.

*This reading list is subject to modification at the discretion of the instructor*