

Potential Instructor(s):

[Dave Donnan](#), Partner Emeritus, AT Kearney

[Jessica Adelman](#), Former Group EVP, Kroger

Potential Guest Lecturers:

[Anthony Kingsley](#), MA, MSc, Local & Sustainable Product Lead, US Foods

[Dana Gunders](#), Executive Director, ReFed

[Nyree Zerega](#), Plant Biology, Northwestern University

NU Faculty Sponsor:

TBD - [Dave Chen](#), Kellogg and Principal & Chairman, Equilibrium Capital

Class Room: TBD

Class Timing: TBD (Fall Quarter, second 5 weeks of quarter); one 3 hour class or two 90 minute classes

Pre-requisites: Students must have successfully completed ISEN 471 Sustainable Food (offered Fall Quarter, first 5 weeks) or have the equivalent experience as approved by the instructor.

Course Synopsis: This class will investigate the future of food systems including changes in production, transportation, processing and consumption of food. It will focus on upcoming challenges and opportunities in the world of food and agriculture and the role of economics, policy, technology and climate impact. Growing and changing consumer demand, supply chain disruptions (including COVID-19 impact), modifications in farming practices and more will shape the future of food. Additionally, instructor will address the increased focus on sustainability, the influence of investors and the impact of market disruptors.

Course Goals: Students build knowledge on disruption in the food supply chain, what changes can we expect in the future:

- Changes in end customer demand / Feeding the World
- Modern Issues: Food & Health, Equitable Access and Food Waste
- Sustainable Farming & Sustainable Protein -- cell based, plant based
- Supply Chain Modifications / Evolution
- Investments & Innovation in Food and Agriculture

Students are expected to complete readings prior to class. Please refer to the reading list for primary texts that will be used for the class. There will also be supplemental readings and films including articles and essays, that will be provided by the instructor. As part of the class, we will have a series of guest

lectures by stakeholders that work in agriculture, food systems, food waste and the investment community.

Grading/Assessment:

Grading will be based on the following rubric:

Component	Weight	Details	Due
Case Write Ups	60%	Three 2-3 page write ups on key questions from case studies. Students will submit their write-ups before the class discussion session. Late assignments will be accepted with extenuating circumstances.	Week #2, #3, #4
Final Paper	25%	Final paper (~8-10 pages) that includes an analysis of a potential change in our future food and agriculture system. For example, a student may choose to analyze market potential of plant-based protein vs beef in China. The student would have to consider practical aspects of plant-based protein production, processing, distribution and marketing of the product. The paper might include a discussion of the product positioning, the role of sustainability and the climate impact of this shift (methane reduction etc). The student would also have to consider the financial and environmental cost-benefit of this shift while outlining potential risks or barriers. Students must confirm their final paper topic with the instructor by the beginning of Week #4.	Week #5, intermediate deadline at Week #4
Preparation, Participation and Effort	15%	Based on attendance and instructor assessment of preparation and participation in class on a weekly basis. There may be unannounced quizzes on the readings which students should be prepared for.	Ongoing

Grading Policy: Grades will be assigned based on all the work you have completed during the quarter following the traditional practice of A=90-100, B=80-89, C=70-79, D=60-69, F<60.

Reading: Readings will be assigned by the instructor on a weekly basis. They may include:

Required Readings

- Little, Amanda. The Fate of Food: What We'll Eat in a Bigger, Hotter, Smarter World. June 2019.
- [Sustainable](#) (film), 2017.
- [Game Changers](#) (film), 2018.
- Bittman, Mark. "[Don't Ask How to Feed the 9 Billion](#)," NYT, Nov 12, 2014 (Module 11.2)
- https://www.ted.com/talks/jonathan_foley_the_other_inconvenient_truth
- PBS [Future of Food](#) Series
- "Nourished Planet: Sustainability in the Global Food System", **Barilla Center for Food and Nutrition**
- Selected Articles
 - <https://www.cnn.com/2020/05/05/business/wendys-beef-shortage/index.html>
 - <https://www.forbes.com/sites/janetforgrieve/2018/11/02/picturing-a-kindler-gentler-world-vegan-month/#4a4025692f2b>
 - <https://www.nap.edu/read/2116/chapter/5#49>

Additional Readings

The instructor will assign selections from the list below on a weekly basis.

- Barber, Dan. The Third Plate: Field Notes on the Future of Food. May 20, 2014.
- Pollan, Michael. The Omnivore's Dilemma: A Natural History of Four Meals. April 11, 2006.
- Millstone, E. and T. Lang. The Atlas of Food: Who Eats What, Where, and Why. University of California Press, Berkeley. 2013.
- Deering, K. 2014. Stepping up to the challenge. Six issues facing global climate change and food security. (link is external) CCAFS (Climate Change and Food Security Program)-UN (United Nations), 2014. (Module 11.2)
- [Advancing Global Food Security in the Face of a Changing Climate](#), p. 18, Box 4, The Chicago Council on Global Affairs.
- <https://www.nationalgeographic.com/foodfeatures/feeding-9-billion/>
- <https://www.forbes.com/sites/forbesinnovationteam/2019/10/01/5-innovations-changing-the-future-of-food/#33f97f3b6173>
- [How this Tiny Country feeds the world](#)
- Dunn, Robert. "[Never out of season](#)", March 2017.
- [Datassential](#) – trends in foodservice; Beyond Meat is working on meatless bacon
- [Bugs](#) (2016)



CLASS OUTLINE

Weekly Topic	Description
<p>1: The Future of Food Consumption</p>	<p><u>Future Demand for Food</u></p> <ul style="list-style-type: none"> • Feeding the world – population growth • Changing Global Diets – increasing demand for animal protein • Food marketing and perceptions (developing and developed world) <ul style="list-style-type: none"> ○ Wealth & meat ○ Increasing veganism ○ Food & health <p><u>Future Supply of Food</u></p> <ul style="list-style-type: none"> • Supply / demand disconnect; current focus on yield • Supply risks such as reduction in genetic diversity of grains • Controversy in food production: factory farming, pesticides etc • Role of Labels -- organics, Free Range, Grass Fed – What do they mean and how are they marketed? What has impact for customers? • Product Innovation in food supply
<p>2: The Future of Food Policy</p>	<p><u>Current Food Policy</u></p> <ul style="list-style-type: none"> • Review of food regulation: US, Europe, developing markets • Food Deserts, Poverty and Equitable Access <p><u>Food, Health & Environment</u></p> <ul style="list-style-type: none"> • Role of diet on human health • Impact on broader markets, e.g. insurance, waste management • Environmental impact of food waste and potential solutions (Guest Speaker: Dana Gunders) <p><i>CASE STUDY A: Discuss one of the concepts introduced in the film “Game Changers” or “Sustainable”</i></p>
<p>3: Sustainable Farming & Sustainable Protein</p>	<p><u>Sustainable Farming</u></p> <ul style="list-style-type: none"> • Assessment of current farming practices and ownership • Trends in US farming and concentration of food production • Implications and alternatives to pesticides, clear cutting, GMOs, homogenized seeds and other traditional farming practices • Trends in sustainable agriculture such as seed diversity, regenerative agriculture, silvopasture, tree intercropping, aquaponics, indoor farming <p><u>Sustainable Protein</u></p> <ul style="list-style-type: none"> • The impact of livestock on climate • Meat consumption patterns across the world • Role of pandemic in changing meat consumption



	<ul style="list-style-type: none"> • The role of cell based proteins, plant-based proteins, alternative animal proteins (e.g. insects) • Outlook for innovations and trends in protein <p><i>CASE STUDY B: TBC - Ancient Grains, Alternative Proteins, Cell Based Meat</i></p>
<p>4: Supply Chain Evolution</p>	<p><u>Food Supply Chain Today</u></p> <ul style="list-style-type: none"> • Assessment of current players in food supply chain • Global risks in supply chain • Concentration of power and risks <p><u>Supply Chain Evolution, Innovation, Risks and Opportunities</u></p> <ul style="list-style-type: none"> • Discussion on how supply chain is evolving now – including impact of pandemic • Examples of supply chain innovation and outline of the remaining or looming “big challenges” • Review of overall risks and opportunities in the coming years • Key stakeholders that are influencing change in the supply chain <p><i>CASE STUDY C: Discuss one major change (either past or potential) in the supply chain. Outline what might drive the change and summarize its likely impacts. (instructor to provide list of 3-5 potential changes to use for case)</i></p> <p>Select case for final submission by first class of week</p>
<p>5: Investments in Food and Agriculture and “The Future”</p>	<p><u>Overview of Investment Community in Food & Agriculture</u></p> <ul style="list-style-type: none"> • Key Players • Methods of Funding • Major Investments and how they are changing <p><u>Discussion of “The Future”</u></p> <ul style="list-style-type: none"> • Looking into the crystal ball – What are the likely changes and macro trends that will influence them? • Food & Agriculture Landscape – Who are the leaders of the future? • Changing our Table – What will food look like for US consumers in 5, 10 and 20 years? • Keeping Up – How can those active in food, agriculture and sustainability markets stay up to speed on the evolving market? <p>Final Paper Due</p>

There will be no final exam for this class, but final paper will be due on scheduled final exam date.



Northwestern University Policies & Resources:

Academic Integrity

Academic integrity is taken very seriously at Northwestern. Students are responsible for reading and understanding Northwestern's Academic Integrity policies. All suspected violations will be reported to the McCormick College of Engineering's Dean's Office. These include: cheating, plagiarism, fabrication, unfair advantage, unauthorized collaboration, and aiding and abetting of academic dishonesty. Students found in violation of academic integrity may receive a zero on the assignment or a failing grade for the course, and may be suspended or permanently expelled from the University. See [Academic Integrity: A Basic Guide](#) for more information.

AccessibleNU and Disability Accommodations

Any student requesting accommodations related to a disability or any other condition is required to register with AccessibleNU (847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential. See the [AccessibleNU website](#) for more information.

Illness and Medical Leave of Absence

Review the University's [policy](#) on missing academic work due to illness. Your instructor cannot waive an assignment missed due to illness unless she can verify your illness with Health Services.

Discrimination and Sexual Harassment

Northwestern's Policies on Discrimination, Harassment, and Sexual Harassment apply to all members of the University community, including students, staff, faculty, and third parties. Any student, staff, faculty member, or third party who believes that they have been discriminated against or harassed on the basis of their race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, pregnancy, parental status, marital status, age, disability, citizenship, veteran status, genetic information or any other classification protected by law, should contact the Office of Equity at (847) 467-6571. Additional information about the University's discrimination and harassment policies, including the campus resources available to assist individuals with discrimination or harassment concerns, is available online on the [Office of Equity Website](#). Students, staff, and faculty who report harassment, discrimination, or sexual misconduct are also protected under the [University's Policy on Non-Retaliation](#).

Sexual Misconduct and Reporting

Northwestern University is committed to fostering an environment where students are safe and free from sexual misconduct. [Confidential resources](#) are available to those who have experienced sexual misconduct. Faculty and instructors are not confidential resources and are required to report incidents of sexual misconduct, whether discussed in your assignments or in person, to the Office of Equity, which can provide information about resources and options. We encourage students who have experienced sexual misconduct to talk with someone to get support. For more information, including how to request interim protective measures and academic accommodations or file a complaint, see the [Get Help page](#).

Other Resources

Students can find useful resources for safety and security, academic support, and mental and physical health and well-being at the [NUhelp website](#).