

FIGHTING FOOD WASTE AND LOSS

IDS2935/#23204

UF QUEST2, SPRING 2020

GENERAL EDUCATION: (B) BIOLOGICAL SCIENCE, (N) INTERNATIONAL

(A minimum grade of C is required)

Class resources, announcement, updates, and assignments will be made available through Canvas site.



COURSE TIME AND LOCATION

Monday, Wednesday, Friday, Period 4: 11:45 AM -12:35 PM
Benton Hall, 0328

INSTRUCTORS

Tie Liu. Ph.D. Assistant Professor of Postharvest Genomics
Email: tieliu@ufl.edu Phone: 352-846-2638

OFFICE HOURS

Tuesday, 2:30 – 4:30 PM, Fifield Hall Room 1213

Emailing for an appointment will ensure that there will be no waiting time.

COURSE DESCRIPTION

According to the Harvard Law School's Food Law and Policy Clinic and the Natural Resources Defense Council, Americans throw away as much as 40% of all food at an estimated cost of \$165 billion every year. Worldwide, one-third of the world's food — some 1.3 billion tons — is lost or wasted every year, according to the United Nations Environment Program. Food waste and loss also have environmental and economic impacts on human society and the planet. Food waste is responsible for over 7% of the world's greenhouse gas emissions, making it a key challenge in tackling climate change. Additionally, food insecurity, food waste, and chronic diseases such as obesity and diabetes are intricately linked. Food loss and waste occur throughout the food supply chain, from the initial harvesting down to the final consumer consumption, presenting both challenges and opportunities to addressing this.

The substance of this course consists of three parts: 1) postharvest raw product biology and processing 2) environmental and economic impacts of food loss and waste; 3) innovative strategies to prevent and reduce food loss and waste. This is an interdisciplinary course that focuses on the interactions among horticultural science, animal science, agronomy, environmental biology, food science & human nutrition, and public health. Horticultural biologists may specialize in postharvest management such as handling and storage, or in breeding new varieties of fruits and vegetables using cutting-edge technologies. Environmental scientists focus on the relationships among plants, animals and their environment, including problems with food spoilage in landfills, food waste causing greenhouse gas emissions and climate change. Food scientists and microbiologists concentrate on addressing the contamination of food loss and waste and on creating and promoting opportunities for advancing public health.

The facts of food loss and waste and the resulting consequences affect us in many ways, ranging from important economic and social issues to lasting and detrimental environmental problems. We need to work on these issues to develop a sustainable environment for global food security, population growth, and human health. The scope of this

course and the subjects covered will expand the education of the students and broaden my teaching and research interests in postharvest biology, environmental, food sciences, and communication technology in reducing food waste. The interdisciplinary Quest 2 course covers the areas of biological science, food science and technology, and social science. The topics we will focus on four major subjects: Postharvest waste and loss, empower stakeholders, food safety, and communication technology in reducing food waste and loss. The class include guest lectures, TED talks, group discussion and students` oral presentation. We will help students identify the current issues in food waste and loss, evaluate the economic problems of food waste, develop critical thinking, and identify strategies to reducing food waste and loss. The class is designed to provide students from all major who want to tackle for major future challenges of food and agriculture. Assignments will include group discussions, report writings on selected topics, and oral presentation.

COURSE DELIVERY

Monday class will engage in lecture content delivery, Wednesday will include a 15-min TED talk followed by an assigned group discussion led by the course director Dr. Tie Liu. Friday class will consist of two 15-min oral presentations by the students and a 20-min summary and a case study by guest lecture or Dr. Tie Liu. The lecture will focus on the concept learning, literature study, case studies, and core knowledge in postharvest biology, food science, microbiology, and communication technology as listed in the Weekly Schedule at Page 4-7. TED talks and group discussions will emphasize on the global problem, challenge, and impact. While the student`s oral presentation will focus on discovering the novel solutions for solving the problems.

EDUCATION LEARNING

The course includes a weekly group discussion, case studies, oral presentation and report writing. There also will have field trip to visit Dr. Naim Montazeri`s Food Microbiology Lab (<https://www.nmontazeri.com/research>), and Field and Food Pantry in UF campus which gives student opportunity of learning through experiences. (<https://fieldandfork.ufl.edu>)

COURSE MATERIALS

Textbook

There are no required texts. Readings will focus on current food waste and loss literature. Selected readings will be distributed in class or provided via electronic means. Many of the assigned readings can be obtained on selected e-journal-based locations. Readings will be assigned at least one week in advance of scheduled in-class discussions. The following textbooks are recommended for the course. Links to peer-reviewed reading materials will made via canvas.

- ***Postharvest handling***, Florkowski, 2009 (Text Book, Postharvest Waste and Loss)
- ***Postharvest, an introduction to the physiology and handling of fruit and vegetable***, Ron Wills and John Golding, 2016 (6th Edition, Text Book)
- ***Taking a Bite out of Food Waste: A Closer Look at What We`re Leaving on the Table***, Adrian Hertel, 2018 (Empower Stakeholders)
- ***Food Waste at Consumer Level: A Comprehensive Literature Review***, Ludovica Principato, 2018 (Communication Technology in Food Waste and Loss)
- ***Postharvest Pathology***, Don Prusky (Text Book, Food Safety)
- ***Food and Agriculture Organization of the United Nations report***, 2011 (Food Safety)
- ***100 Under \$100: Tools for Reducing Postharvest Losses***, Betsy Teusch, 2019 (Text Book, Communication Technology in Food Waste and Loss)

Course Website

This course has a comprehensive website in the canvas platform. Course handouts, syllabus, and other learning materials can be found there.

- *E-learning in canvas*, www.elearning.ufl.edu

COURSE ASSIGNMENT

Written Assignment (Two-page Essay)

Topics will be selected by the lecturers. **Examples of acceptable topics:** postharvest issues, reducing food waste and loss, nutrition, microbiology and health, environmental and economic issues of food waste, etc.

Discussion

There will be 15 assignments that require reading a journal article/case studies and or watching a video (TED Talk) before the class.

Students will select from four key areas: Reducing Postharvest Loss, Empower stakeholders, Food Safety, and Communication Technology in Food Waste and Loss.

First, students will write a general report on a selected topic for its history, impact on human health, and possible solution to solve the problem. Following they will have a group discussion on the topics on Wednesday's class. Then, students will do a presentation on the selected area. Finally, student will write an observation reports after each classmate's presentation. There will be four partial evaluation. Each partial submission will be worth 10 points. Additional guidelines and grading rubrics for each evaluation will be provided via Canvas.

A Group Discussion will be carried out on Wednesday after every guest lecture or TED talks to expand on the topic and to address the possible solutions. The active participation and answering question in class will be worth 10 points.

The Friday lecture will be a literature-based presentation following a summary of this week's course content to expand on the topic and to address possible solutions with regard to the topics of Monday's lecture.

Students will be required to select a research or review article that reflects their personal interests. The paper will be approved by the instructor. Students will present the paper and lead a peer-review discussion and evaluation of the work.

Attendance

Class attendance is mandatory and will be used as one index of student participation and evaluation. Special circumstances necessitating absences must be arranged in advance or, in the event of an emergency, explained upon return.

Experiential Learning

Two field trips are designed to connect students with the food microbiology lab and UF's Alan and Cathy Hitchcock Field and Fork Food Pantry Program. These trips will provide the students with a first-hand view of the techniques for handling food waste, sustainability, and security that are being implemented today to compare and contrasts these with the techniques discussed in class. A field trip to local farm could also be organized depending on the students' interests.

At the beginning of the semester, each student will be required to select a single food product (fruits, vegetables, meats) as the focal point for their study of food waste and loss. A two-page essay will be written by every student after grocery store observation or the field trip.

COURSE GRADE

Weekly quizzes (12 points, 12%)

Every week on Wednesday during class, a 10-question quiz will be available in Canvas. Quizzes will consist mostly of multiple-choice questions. Each quiz will be worth 2 points, and there will be 12 quizzes during the semester. Each quiz will be timed to 10 minutes, and it can only be taken once. Students must bring a web-enabled device (laptop computer, tablet computer, phone) to take the quiz in.

Written Assignment (Two-page Essay, 15 points, 15%)

Topics will be selected from major key areas: postharvest issues, reducing food waste and loss, microbiology and health, food safety, environmental and economic issues of food waste, etc. Additional guidelines and grading rubrics will be provided via Canvas.

Video recording (18 points, 18%)

The objective of this assignment is to document postharvest fruits or vegetables deterioration and its associated composting to create an informative video about the process of senescence and degradation for a fresh produce. Students will share videos with classmates and make PowerPoint for the case study of composting. Then, based on their case study information and feedback, students will prepare and record a 5-minute video where they introduce postharvest handling, process and storage of their vegetables and fruits as well as strategies for composting to reduce food waste and loss. Additional guidelines and grading rubrics for each submission will be provided via Canvas.

Mid-Term Exam (15 points, 15%)

The mid-term exam will be given on campus at the 8th class week on the canvas website. Students must bring a laptop for the exam which will contain 20 multiple choice questions. Students must bring a web-enabled device (laptop computer, tablet computer, phone) to take the exam. If there is an issue with attending the exam at this time, it should be discussed with the Dr. Tie Liu at least one week before the exam.

Oral Presentation (30 points, 30%)

Students will prepare and present a 15-minutes oral presentation followed by a five minutes feedback section and discussion. Additional guidelines and grading rubrics will be provided via Canvas.

Class participation and (10 points, 10%)

Final Grade

A = 100-93	C(S) = 76-73
A- = 92-90	C-(U) = 72-70
B+ = 89-87	D+ = 69-67
B = 86-83	D = 66-63
B- = 82-80	D- = 62-60
C+ = 79-77	E = 59-0

Final grades will be computed according to the percentages above. Students missing scheduled exams due to excused absences will be permitted to perform make-up exams at a time and place arranged between the student and instructor.

Additional information on current UF grading policies for assigning grade points can be found here:

Grading policy, <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Attendance and Make-up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

- *UF Attendance policy*, <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

- *For more information regarding the Student Honor Code, please see:* <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

Technology

Students will need to have access to a computer or tablet to complete the mid-term and final exams. Additionally, students will need to access to computer to prepare oral presentation.

Lectures, Attendance, and Make-up Policy

Students are expected to attend every lecture and complete all assignments before the deadlines. Later assignments will be graded only for documented emergencies as per UF's attendance policy. Additional information about UF's attendance policy can be found here:

- *Attendance policy*, www.catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken when appropriate.

Services for Students with Disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

- *Disability Resource Center*, 0001 Reid Hall, (352) 392-8565, www.dso.ufl.edu/drc/

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *Counseling and Wellness Center*, 3190 Radio Road, 392-1575, www.counseling.ufl.edu
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- *U Matter We Care*, www.umatter.ufl.edu
- *Sexual Assault Recovery Services (SARS)*, Student Health Care Center, 392-1161.
- *University Police Department*, 392-1111 (or 9-1-1 for emergencies), www.police.ufl.edu

Additionally, if you would like orientation on choosing a major, finding an internship, or planning your career, I encourage you to use the university's on-campus resources.

- *Career Connections Center*, CR-100 Reitz Union, 392-1601, <https://career.ufl.edu/>

Course Evaluation Process

Student assessment of instruction is an important part of the effort to improve teaching and learning. At the end of the semester, you are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at:

- *Course evaluations*, www.evaluations.ufl.edu

Evaluations are typically open during the last two or three weeks of the semester. You will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at:

- *Evaluations summary*, www.evaluations.ufl.edu/results

Student Complaints

You can file and resolve any complaints about your experience in this course in the following site:

- *Student complaints in residential courses*, <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

QUEST 2 AND GEN ED DESCRIPTIONS AND STUDENTS LEARNING OUTCOMES

Quest 2 Description:

Quest 2 courses are grounded in the modes of inquiry and analysis characteristic of the social and/or biophysical sciences, Quest 2 courses invite students to address pressing questions facing human society and the planet—questions that outstrip the boundaries of any one discipline and that represent the kind of open-ended, complex issues they will face as critical, creative, and thoughtful adults navigating a complex and interconnected world.

Quest 2 Student Learning Outcomes:

1. Identify, describe, and explain the cross-disciplinary dimensions of a pressing societal issue or challenge as represented by the social sciences and/or biophysical sciences incorporated into the course. (Content)
2. Critically analyze quantitative or qualitative data appropriate for informing an approach, policy, or praxis

- that addresses some dimension of an important societal issue or challenge. (Critical Thinking)
3. Develop and present, in terms accessible to an educated public, clear and effective responses to proposed approaches, policies, or practices that address important societal issues or challenges (Communication)
 4. Connect course content with critical reflection on their intellectual, personal, and professional development at UF and beyond. (Connection)

General Education, Biological Sciences (B) Description:

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

General Education, Biological Sciences Student Learning Outcomes:

1. Identify, describe, and explain the basic concepts, theories and terminology of natural science and the scientific method; the major scientific discoveries and the impacts on society and the environment; and the relevant processes that govern biological and physical systems. (Content)
2. Formulate empirically-testable hypotheses derived from the study of physical processes or living things; apply logical reasoning skills effectively through scientific criticism and argument; and apply techniques of discovery and critical thinking effectively to solve scientific problems and to evaluate outcomes. (Critical thinking)
3. Communicate scientific knowledge, thoughts, and reasoning clearly and effectively. (Communication)

General Education, International (I) Description:

International courses promote the development of students' global and intercultural awareness. Students examine the cultural, economic, geographic, historical, political, and/or social experiences and processes that characterize the contemporary world, and thereby comprehend the trends, challenges, and opportunities that affect communities around the world. Students analyze and reflect on the ways in which cultural, economic, political, and/or social systems and beliefs mediate their own and other people's understanding of an increasingly connected world.

General Education, International Student Learning Outcomes:

1. The general education objects will be accomplished through the identification of the global issue of food waste and loss in the aspects of the environment, economy, food safety, and ethics to discuss the potential solutions to reduce the food waste and to develop a sustainable agriculture globally. (Content)
2. Students will understand the food waste and loss has become a worldwide topic of interests and study the postharvest biology and technology to reduce food waste and loss. (Critical thinking)
3. Each week, a lecture and a TED talk followed by a discussion will be provided to discuss the topics from worldwide problem to household solutions of reducing food waste and loss. Students will make assessment and discuss the potential solution through critical thinking and group discussions. (Communication)

COURSE OBJECTIVES AND GOALS

Student Learning Outcomes Assessment

Reflecting the curricular structures of Quest 2 and these Gen Ed designations, after taking Biodiversity in a

Changing World, students will be able to:

1. Explain the global issue of food loss and waste. **(Content SLOs for Q2, Gen Ed Bio, and International)**
2. Analyze current food loss and waste issues and the relationships among food safety, nutrition and public health as well as the related environmental, social, and economic impacts. **(Critical Thinking SLOs for Q2 and Gen Ed Bio)**
3. Summarize and evaluate research-based articles for evidence of anthropogenic activities altering biodiversity and, subsequently, ecosystem services. **(Critical Thinking SLOs for Q2, Gen Ed Bio, and International)**
4. Evaluate the environmental and economic impacts of food waste and food loss. Discuss global food security. **(Critical Thinking SLOs for Q2, Gen Ed Bio, and International)**
5. Develop potential strategies to reduce food waste and loss to maintain food quality and to develop environmentally sustainable methods. **(Critical Thinking SLOs for Q2, Gen Ed Bio, and International)**
6. Identify and communicate the strategies to reducing food loss and waste to create a sustainable food future **(Communication SLO for Gen Ed Bio and Q2)**

COURSE WEEKLY SCHEDULE

Content: A rough list of the weekly topic areas the class will cover.

(Major topics highlighted in green, Lectures in grey, TED talks and Group Discussion in yellow)

Week	Topic Area	Weekly SLO Description	Weekly Readings
Postharvest Waste and Loss: Feed more people with food all along the food chain			
1 Jan6-10 Mon	Food loss and waste: why should we care? (Part I) (Overview of food loss and waste) Dr. Tie Liu, Assistant Professor, Horticultural Sciences Department	Recognize the global challenge of postharvest loss reduction	Reducing Food Loss and Waste, 2019, WRI <i>Page 3-15</i> (13 pages)
Wed	Food loss and waste: why should we care? (Part II) Dr. Tie Liu		
Fri	Guidelines for watching TED talk (FFWL video), preparing oral presentations, and taking a timelapse video of a vegetable or fruit. Dr. Tie Liu.		
2 Jan13-17 Mon	Postharvest procedures for the maintenance of food quality Dr. Tie Liu	Understand postharvest physiology of fruit and vegetable	Postharvest Ron Wills: Chapt. 1 <i>Page 1-15</i> (15 pages)
Wed	TED talk: A Recipe for Cutting Food Waste: Peter Lehner https://www.youtube.com/watch?v=UwOHpWTRsbE Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Reducing Food Waste and Loss: two students, 20 min each Quiz 1		
3 Jan22-24 Mon	Increasing food security by optimizing consumption (Part I) Dr. Jeff Brecht, Professor, Department of Horticultural Sciences	Learn various postharvest technology	Postharvest Ron Wills, 2007 <i>Chapt. 2</i> <i>Page 16-33</i> (16 pages)
Wed	Increasing food security by optimizing consumption (Part II) Dr. Jeff Brecht		
Fri	Student presentation on Increasing Food Security: two students, 20 min each		

	Quiz2		
4 Jan 27-31 Mon	Postharvest handling to reduce food waste and loss (Part I) Dr. Jeff Brecht	Postharvest technology to reduce food waste and loss	Postharvest <i>Ron Wills, 2007</i> <i>Chapt. 3</i> <i>Page 34-60</i> <i>(25 pages)</i>
Wed	Postharvest handling to reduce food waste and loss (Part II) Dr. Jeff Brecht		
Fri	Student presentation on Postharvest Handling: two students, 20 min each Quiz 3		
5 Feb 3-7 Mon	From farm to table Invited Speaker: Dr. Xin Zhao, Associate Professor, Horticultural Sciences Department	Identify the best practices to keep produce fresh	Postharvest handling, <i>Florkowski, 2009</i> <i>Chapt. 4</i> <i>Page 43-52</i> <i>(10 pages)</i>
Wed	TED talk: Stop Wasting Food: Selina Juul (15 min) https://www.youtube.com/watch?v=dllhbjY4s8A Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Stop Wasting Food: two students, 20 min each, Quiz 4		
6 Feb10-14 Mon	Feeding food with food (Food waste composting) Invited Speaker: Dr. Xin Zhao	Identify nutrition loss and composting for the homeowner	100 Under \$100, Betsy Teusch. <i>Section 5</i> <i>Page200-212</i> <i>(12 pages)</i>
Wed	TED talk: Compost king: Paul Sellew (15 min) https://www.youtube.com/watch?v=6eXRfynD-M8 Group Discussion led by Dr. Tie Liu		
Fri	Student presentation: two students, 20 min each Quiz 5		
	Empower Stakeholders		100 Under \$100, Betsy Teusch.
7 Feb17-21 Mon	Making the most of picky consumers (Food loss and waste in small farms) Dr. Tie Liu	Explore small scale postharvest handling technology (Part I)	<i>Section1</i> <i>Page15-60</i> <i>(34 pages)</i>
Wed	TED talk: The Global Waste Scandal; (15 min) https://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal?language=en#t-268769 Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Reducing Food Waste in Stakeholders: two students, 20 min each, Quiz 6		
8 Feb24-28 Mon	Food loss and waste from a grocery store point of view (Part I) Invited Speaker: David Domash, Grocery store produce manager, Publix	Identify small scale postharvest handling technology (Part II)	100 Under \$100, Betsy Teusch. <i>Section 2</i> <i>Page 63-103</i> <i>(39 pages)</i>
Wed	Food loss and waste from a grocery store point of view (Part II) Dr. Tie Liu. Mid-term Exam (20 min)		
Fri	Student presentation on Reducing Food Waste in Grocery Stores: two students, 20 min each		

Mar2-6	Spring Break		
9 Mar9-13 Mon	Keeping plates clean for a blue sky Dr.Tie Liu, Assistant Professor	Analyze environmental impacts on food wastes	100 Under \$100, Losses, Betsy Teusch. Section 7 Page 238-250 (12 pages)
Wed	TED talk: Energy from floating algae pods: Jonathan Trent (15 min) https://www.ted.com/talks/jonathan_trent_energy_from_floating_algae_pods . Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Fuel without Fossils: two students, 20 min each Quiz 7		
	Food Safety		Postharvest Pathology, Don Prusky. Chapt.1 Page 1-12 (12 pages)
10 Mar16-20 Mon	Keeping food fresh postharvest (Postharvest pathology) Mark Ritenour, Professor, Horticultural Sciences Department	Identify the postharvest diseases	
Wed	Keeping food fresh postharvest (Postharvest pathology) Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Food Safety: two students, 20 min each Quiz 8		
11 Mar23-27 Mon	Food traceability and recall (The rise of recalls) Invited Speaker: Dr.Naim Montazeri, Assistant Professor of Food Virology (https://fshn.ifas.ufl.edu/directory/faculty/montazeri/)	Recognize microbiology in food processing	Food Recall: https://edis.ifas.ufl.edu/fs108
Wed	Field Trip: The Food Safety Lab, FSHN		
Fri	Student presentation on Reducing Food Recall: two students, 20 min each Quiz 9		
12 Mar30- Apr3 Mon	Harnessing predictive food microbiology to reduce food waste (Part I) Invited Speaker: Dr.Daniel Czyz, Assistant Professor of Microbiology & Cell Science (http://microcell.ufl.edu/people/faculty-directory/czyz/)	Explore technologies in reducing food contamination	Antibiotic Resistance Threats in the United States
Wed	Harnessing predictive food microbiology to reduce food waste (Part II) Invited Speaker: Dr.Daniel Czyz		
Fri	Student presentation on Health Benefits in Reducing Food Waste: two students, 20 min each Quiz 10		
	Communication Technology in Reducing Food Waste and Loss		
13 Apr6-10 Mon	Effects of waste on the public wallet Invited Speaker: Anna Prizzia, Director, Field & Fork Program, (https://fieldandfork.ufl.edu/about/our-team/)	Identify economic impact of food waste and loss	100 Under \$100, Betsy Teusch. Section 4 Page 152-197 (45 pages)
Wed	Field Trip: The Field and Food Pantry, UF campus		
Fri	Student presentation on Economic Impacts from Food Waste: two students, 20 min each. Quiz 11		
14 Apr13-17 Mon	Food waste and hunger in Africa Steve Sargent, Professor, Horticultural Science Department	Learn food loss and waste in Africa and	Reducing Food Loss

		other developing countries	and Waste, 2019, WRI Chapt.1 Page 17-21 (5 pages)
Wed	TED talk: Ending Hunger Now: Josette Sheeran (12 min) https://www.ted.com/talks/josette_sheeran_ending_hunger_now?language=en . Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Ending Hunger: two students, 20 min each Quiz 12		
15 Apr20-24 Mon	What can we do about the food waste and loss? Invited Speaker: Dr. Kevin Folta, Professor, Horticultural Science Department	Communication and outreach strategies in reducing food waste	Reducing Food Loss and Waste, 2019, WRI Chapt.4. Page 59-75 (15 pages)
Wed	TED talk: How ugly, unloved food can change the world: Dana Cowin (15 min) https://www.ted.com/talks/dana_cowin_how_ugly_unloved_food_can_change_the_world Group Discussion led by Dr. Tie Liu		
Fri	Student presentation on Fighting Food Waste: two students, 20 min each		
16 Apr27-May1 Mon	Integrated solution to reduce food waste and loss Dr. Tie Liu	Summary of solutions to reduce food waste and loss	Reducing Food Loss and Waste, 2019, WRI Chapt.5 Page 75-93 (18 pages)
Wed	Final exam (20 min)		
Fri			