

# Living and Eating on Earth

IDS2935

Time: M-W-F Period 4 (10:40-11:30)

Location: McCarty Hall B 3096

Fall 2022

<p><b>Instructor:</b> James Estrada Office: 3121 McCarty Hall B Phone: 352-294-1588 estrada@ufl.edu Office Hours: MWF 9:30-10:30</p>	<p><b>Teaching Assistants:</b> Hannah Brown hbrown2@ufl.edu</p>
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## Course Description:

How can we feed a global population that could exceed 10 billion by 2050? Can we increase food production while still protecting the environment? This class examines the complex relationship between humans, their food, and the environment that sustains them both. Students will explore these themes through reflection on personal beliefs and behaviors, analysis of pressing agricultural and environmental issues, and evaluation of potential solutions for sustainable production. Major themes include plant biology and ecology, plant metabolism and chemistry, agriculture and environmental policies, global trends in population growth, climate change and food security, and how personal and cultural perceptions of food affect trends in consumption and conservation. While these themes will primarily be considered at the global level, local/regional policies and trends may be presented as context for classroom discussions and activities.

## Course Delivery:

Monday classes will focus on direct content delivery, while Wednesday and Friday will consist of literature/case-study discussions and group activities, respectively. Lectures will introduce core knowledge of the week's topic and ensure timely achievement of course objectives. The weekly literature/case-study discussions (led by the instructor and/or TA) will build on lecture content by introducing qualitative and quantitative data analysis and experiential learning through real-life problem assessment. While lectures and discussions emphasize identifying and understanding major course themes, group activities challenge students to synthesize this information and create novel solutions for international dilemmas.

## This Class in the Quest 2 (Q2) Curriculum Fills Biological Science (B) and International (N) Gen Ed Requirements

### What are the Objectives of Quest 2 (Q2)?

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.

### What are the Objectives of Gen Ed Biological Sciences (B) Classes?

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.

### **What are the Objectives of Gen Ed International (N) Classes?**

The N designation is always used in conjunction with another program area. 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.

#### ***THESE QUEST AND SUBJECT AREA OBJECTIVES WILL BE ACCOMPLISHED THROUGH:***

- Exposing students to global concepts linking society, food resources, and the environment.
- Evaluating and critiquing personal beliefs and behaviors, current challenges of global food security and environmental sustainability, and potential scientific and societal solutions for improving agricultural sustainability and international food availability and nutrition.
- Enhancing critical communication skills by presenting project results via multiple modalities, including written reports, poster presentations, student-led activities, and group seminar-style presentations.

#### **AT THE END OF THIS COURSE, STUDENTS WILL BE ASSESSED ON Q2, B, AND N LEARNING OUTCOMES IN FOUR AREAS: CONTENT, CRITICAL THINKING, COMMUNICATION, AND CONNECTION**

#### **1) CONTENT SLOS:**

**Gen Ed B:** 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 systems

**Gen Ed N:** Identify, describe, and explain the historical, cultural, economic, political, and/or social experiences and processes that characterize the contemporary world.

**Quest 2:** 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.

#### **This Course:**

- AT THE END OF THE COURSE, STUDENTS WILL BE ABLE TO... EXPLAIN fundamental concepts relating to the scientific method and experimentation, modern agriculture, current/past US environmental challenges, global food security, and societal perceptions of food and nutrition.
- ACHIEVEMENT OF THIS LEARNING OUTCOME WILL BE ASSESSED THROUGH: four multiple choice and short answer quizzes (fact checks), discussion and review of primary literature and case-studies pertaining to core course themes, and a field research experience essay.

#### **2) CRITICAL THINKING SLOS :**

**Gen Ed B:** Formulate empirically-testable hypotheses derived from the study of 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

**Gen Ed N:** Analyze and reflect on the ways in which cultural, economic, political, and/or social systems and beliefs mediate understandings of an increasingly connected contemporary world.

**Quest 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.

**This Course:**

- AT THE END OF THE COURSE, STUDENTS WILL BE ABLE TO... **ANALYZE AND INTERPRET** the intersection of society's perception of food and public health, including nutrition, access to food resources, and disease; **SYNTHESIZE** course lectures and activities to develop a proposal for leveraging modern agriculture practices and technologies to sustainably feed a growing human population.
- ACHIEVEMENT OF THESE LEARNING OUTCOMES WILL BE ASSESSED THROUGH: group projects, paper reviews, and the field research experience essay.

**3) COMMUNICATION SLOs:**

**Gen Ed B:** Communicate scientific knowledge, thoughts, and reasoning clearly and effectively.

**Gen Ed N:** n/a

**Quest 2:** 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

**This Course:**

- AT THE END OF THE COURSE, STUDENTS WILL BE ABLE TO.... **DEVELOP AND PRESENT** novel solutions for real-world problems; **EXPLAIN** key scientific findings in written, oral, and visual formats
- ACHIEVEMENT OF THESE LEARNING OUTCOMES WILL BE ASSESSED THROUGH: four group projects, including a written report, a poster presentation, and an in-class group presentation.

**4) Connection SLOs:**

**Gen Ed B:** n/a

**Gen Ed N:** n/a

**Quest 2:** Connect course content with critical reflection on their intellectual, personal, and professional development at UF and beyond

**This Course:**

- AT THE END OF THE COURSE, STUDENTS WILL BE ABLE TO... **ARTICULATE AND CRITIQUE** their own personal beliefs and behaviors related to food production and consumption
- ACHIEVEMENT OF THESE LEARNING OUTCOMES WILL BE ASSESSED THROUGH: class discussion and group projects

**Required Text:**

Gliessman, S. (2015). *Agroecology: The ecology of Sustainable food systems*, 3<sup>rd</sup> Edition. (ISBN 9781439895610) Boca Raton: CRC Press,  
<https://doi.org/10.1201/b17881>

**Other Assigned Readings (provided through Canvas)**

- Paul, C., Nehring, R., Banker, D., Somwaru, A. (2004). Scale economics and efficiency in U.S agriculture: Are traditional farms history? *Journal of Productivity Analysis*. 22(3): 185-205.
- Parmar, A., Sturm, B., Hensel, H. 2017. Crops that feed the world: Production and improvement of cassava for feed, feed, and industrial uses. *Food Security*. 9(5): 907-927.
- Lesk, C., Rowhani, P., Ramankutty, N. 2016. Influence of extreme weather disasters on global crop production. *Nature*. 529: 84-87.
- Bodirsky, BL., Rolinski, S., Biewald, A., Weindl, I., Popp, Alexander. (2015). Global feed demand scenarios for the 21<sup>st</sup> century. *Plos One*: 1-27.  
[doi.org/10.1371/journal.pone.0139201](https://doi.org/10.1371/journal.pone.0139201)

**Assigned Videos (links in Canvas)**

- Pamela Ronald. Ted Talk (2015). *The case for engineering our food*.
- Cary Folder. Ted Talk (2009). *One seed at a time, protecting the future of food*.
- Jonathon Foley. Ted Talk (2010). *The other inconvenient truth*
- Hans Rosling. Ted Talk (2010). *Global population growth, box by box*
- billion
- Jamie Oliver. Ted Talk (2010). *Teach every child about food*
- Chuck Rice. Ted Talk (2016). *Agriculture: Meeting the challenges of the 21<sup>st</sup> century*
- Kristie Ebi. Ted Talk (2019): *How climate change could make food less nutritious*
- Matt Clifford. Ted Talk (2017). *The Ugly Side of Food Waste*
- Devita Davison. Ted Talk (2017). *How urban agriculture is transforming Detroit*
- Bruce Friedrich. Ted Talk (2019). *The next global agricultural revolution*

**WEEKLY COURSE SCHEDULE:**

Dates	Week	Topic	Assessment	Assignments
	<b>1</b>	<b>Global Trends in Agriculture</b>		
Aug 24		W: Class Orientation		
26		F: Lesson 1; Activity 1: Self Reflection (Homework)		
	<b>2</b>	<b>History and agriculture in the US</b>		
29		M: Lesson 2		<b>Activity 1 Due</b>
30		W: Activity 2: Scientific Method		
Sep 2		F: Field Trip – <b>Student Gardens</b>		
	<b>3</b>	<b>Plants that feed us</b>		
5		<b>M: OFF-HOLIDAY</b>		
7		W: Lesson 3 (Gliessman Ch 3, pp 35-43)		
9		F: Activity 3: The Perfect Farm: Loken & Oda (video)		

	<b>4</b>	<b>Agriculture and the environment</b>		
12		M: Lesson 4 (Gliessman Ch 2 and 12, pp 23-35; 163-171; Selections from Chapters 4 and 5)		
14		W: Activity 4: Zhao et al. (2019)		
16		F: Group Work		
	<b>5</b>	<b>Environmental challenges</b>		
19		M: Lesson 5 (Selections from Gliessman Chapter 6 and 8)		
21		W: Activity 5: Ebi TT (2019): Climate & Food		
23		F: Poster Presentations	<b>Quest 1 Due</b>	<b>Group Project 1 Due</b>
	<b>6</b>	<b>The population problem</b>		
26		M: Lesson 6		
28		W: Activity 6: Rosling TT (2010); Factfulness: Pop		
30		F: Group work		
	<b>7</b>	<b>Global food production</b>		
Oct 3		M: Lesson 7 (Gliessman Ch 11 pp 147-163)		
5		W: Activity 7: Charles et al. (2016)		
7		F: TBD		<b>Student Gardens Report</b>
	<b>8</b>	<b>Food security and conservation</b>		
10		M: Lesson 8 (Gliessman Ch 20 and 24, pp 289-299; 341-357)		
12		W: Activity 8: Kerr et al. (2021): Agroecology		
14		F: Group Work		
	<b>9</b>	<b>Global food availability</b>		
17		M: Lesson 9		
19		W: Activity 9: Bodirsky et al. (2015)		
21		F: Presentations	<b>Quest 2 Due</b>	<b>Group Project 2 Due</b>
	<b>10</b>	<b>Crops of the future</b>		
24		M: Lesson 10 (Selections from Gliessman Chapter 14)		
26		W: Activity 10: Ronald TT (2015): Engineering Food		
28		F: Group poster presentations		
	<b>11</b>	<b>Perceptions of food and agriculture</b>		
31		M: Lesson 11 (Gliessman Ch 23, pp 327-341; Selections from Gliessman Chapter 19)		
11/2		W: Activity 11: Clifford TT (2017): Food Waste		
4		F: Group work		
	<b>12</b>	<b>Changing how we see food</b>		
7		M: Lesson 12 (Gliessman sections from Ch 23 and 24)		
9		W: Activity 12: Davison, Friedrich TT (2017, 2019)		
11		<b>F: OFF-HOLIDAY</b>	<b>Quest 3 Due</b>	
	<b>13</b>	<b>Putting the pieces together</b>		
14		M: Lesson 13		
16		W: Activity 13: Reflecting on the challenges		
18		F: Group Work – No In-Person Class		
	<b>14</b>	<b>Holiday Week</b>		
21		<b>M: OFF -Holiday</b>		<b>Group Project 3 Due</b>
23		<b>W: OFF -Holiday</b>		
25		<b>F: OFF -Holiday</b>		

	<b>15</b>	<b>The challenge we face</b>		
28		M: Lesson 14		
30		W: Activity 14: Rice TT (2016): Ag Challenges		
12/2		F: Group Work	<b>Quest 4 Due</b>	
	<b>16</b>	<b>Potential solutions and outcomes</b>		
5		M: Presentations		<b>Project 4 Presentations</b>
7		W: Presentations		<b>Project 4 Presentations</b>
		<b>F: OFF – READING DAY</b>		
	17	Finals Week		

Sections from Gliessman chapters 4 (43-59), 5 (59-73), 6 (73-87), 8 (99-115), 14 (183-205), and 19 (269-289) will also be read and discussed in relation to general plant biology, plant metabolism, abiotic and biotic factors that affect crop production, and constructing sustainable cropping systems.

#### Evaluation of Grades:

Requirement	Points each	Total Points
Quests (4)	40	160
Group Module Projects (4)	100	400
Class Activities (14)	20	280
Field Experience Essay	160	160
<b>Total Points</b>		<b>1000</b>

#### Assessment Descriptions:

- **Four “Quests”:** These quiz-tests will be completed at the end of the second week of each four-week module. Fact Checks will cover two weeks of material and focus on core concepts covered in lectures and in-class discussions. These assessments will be completed through Canvas and consist of multiple choice and short answer.
- **Module Projects:** These assessments will be due at the end of each four-week module. The project topics are as follows: *Project 1 – The Perfect Farm;* *Project 2 – Food for Everyone;* *Project 3 - Making Food Great Again;* and *Project 4 – Semester Reflection.* Project 1 will be a group poster presentation, projects 2 & 4 will be in-class group presentations (5-10 minutes), and project 3 will be a 3-page paper. A detailed rubric outlining expectations for the following categories will be provided at the beginning of the semester: Summary of problem and solution, Organization, Clarity, Content, and Delivery (for posters and presentation). Project 1 will focus on plant biology/ecology and agriculture and environmental policies, Project 2 on global population growth and food security, Project 3 on personal and cultural perceptions of food, plant metabolism and chemistry, and food conservation. Project 4 will require students to reflect on course lessons and deliver a 5-minute presentation over a key/urgent issue we discussed during the semester.
- **Class Activities:** A 20-point class activity will be conducted weekly in class. These activities involve watching Ted Talks or reading primary literature and answering critical thinking questions associated with the assignment. These activities build on weekly lectures and provide expert insight into key course topics.

**Field Research Experience:** Students will participate in a field trip to the UF Student Gardens. The class will be given an in-depth tour of the gardens with discussion focused on the following themes: 1) Small scale vs. large scale farming, 2) educating the public, and 3) local food systems and the benefits of urban agriculture. Knowledge gained from this experience will be used to complete a 2-page paper outlining an educational or urban agriculture program that could be implemented in Gainesville. Your poster should include the following details: Background, project objective, project justification, plan for implementation, estimated budget (if applicable), and benefits to community. A grading rubric will be provided.

**Grading Scale:**

Score	Percent	Grade	Grade Points
943-1000	93.4-100	A	4.00
900-933	90.0-93.3	A-	3.67
867-899	86.7-89.9	B+	3.33
843-866	83.4-86.6	B+	3.00
800-833	80.0-83.3	B-	2.67
767-799	76.6-79.9	C+	2.33
734-766	73.4-76.6	C	2.00
700-733	70.0-73.3	C-	1.67
667-699	66.7-69.9	D+	1.33
634-666	63.4-66.6	D	1.00
600-633	60-63.3	D-	0.67
0-599	0-59.9	E	0.00

*A minimum grade of C is required for general education credit.* More information on grades and grading policies is here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**Class Attendance and Make-Up Policy**

Class attendance is expected. Each unexcused absence will result in a 10-point reduction in the final grade. Excused absences are consistent with university policies in the undergraduate catalog

(<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Late essays or incomplete presentations will not be accepted. Makeup quiz dates will be provided for students who miss either exam due to extreme, documented circumstances. Students should arrange with the instructor for makeup material, and the student will receive one week to prepare for any makeup assignment, if circumstances allow it.

**Students Requiring Accommodations** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) 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.

**Course Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

**Class Demeanor**

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

**Materials and Supplies Fees**

There are no additional fees for this course.

**Recording Lectures**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

**University Honesty Policy**

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduction-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions.



Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### **Health and Wellness**

*U Matter, We Care:* If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

*Counseling and Wellness Center:* Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

*Student Health Care Center:* Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

*University Police Department:* Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

*UF Health Shands Emergency Room / Trauma Center:* For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

### **Academic Resources**

*E-learning technical support:* Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

*Career Connections Center:* Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

*Library Support:* Various ways to receive assistance with respect to using the libraries or finding resources.

*Teaching Center:* Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

*Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

*Student Complaints On-Campus:* Visit the Student Honor Code and Student Conduct Code webpage for more information.