

PLS 170C3; The Challenge of Feeding, Fueling and Housing 10 Billion People

Spring Semester

Section 001 | Live-Online | M/W 2:00-3:15pm

Instructor: Professor Tanya M. Quist

Email: tquist@email.arizona.edu
Office: 541H Marley Building

Appointments: To ensure my availability and adequate time to address your questions or concerns, please send me

an email to set up an appointment. We will meet in my personal zoom room at

https://arizona.zoom.us/j/5206211582

About me: I grew up in Nova Scotia, Canada surrounded by green rolling hills, deciduous forests, and the Atlantic Ocean. I have always loved plants and knew from a very young age that I would study them. I have completed three degrees that required me to study botany, horticulture, molecular genetics, and plant physiology. The common factor in all my studies was a desire to protect plants and manage plant stress and, optimize their benefit for both human and environmental health. In my everyday life, I love gardening and spending time in nature. In this class, I am excited to share with you the things I have learned about how plants are part of sustainable solutions for feeding, fueling, and housing earth's population. Some of my favorite topics address the ways plants can stabilize the climate, support food and energy security, and enhance livability in cities.

Teaching Assistant: Please direct all initial inquiries to Prof. Quist unless specifically directed to the TA.

Name: Emma Jong, PhD Candidate in Dr. R. Palenivelu's Lab.

Email: emmajong@email.arizona.edu

Course Description:

This course explores the challenges associated with feeding, fueling, and housing an unprecedented number of humans on planet earth. It explores the contributions and limitations of traditional agriculture and industrial production of fuels, in the face of continued population growth, urbanization, climate change and challenges students to consider alternatives. We will look at innovations promoted through modern agricultural systems including biotechnology, breeding and non-traditional approaches that both address the need for food security, fuel production, and urban development while also respecting environmental health and long-term human sustainability.

Course Objectives:

This course is designed to:

- 1. Present and contrast traditional and modern approaches used in agriculture and industry for food and fuel production.
- 2. Create awareness of population growth and changes in population distribution in the 21st Century.
- 3. Teach students about the challenges of food security, fuel independence and housing demands as global grand challenges in light of climate change and population growth.

Expected Learning Outcomes:

After completing this course, students will be able to:

1. Demonstrate an understanding of food and water security as global grand challenges,

- 2. Define the basic concepts of food and energy security in terms of sustainable agriculture and population dynamics,
- 3. Describe benefits and limitations of traditional and emergent food, energy, and housing solutions, and
- 4. Apply understanding of food, energy, and housing security issues to the everyday experiences of our own and other communities.

Course Format and Teaching Methods:

This course is scheduled to be taught in the LIVE ONLINE modality. The class will meet Mondays and Wednesdays from 2:00 – 3:15 pm through Zoom. It requires access to a computer with reliable internet service to complete. As an enrolled student, you will have access to all course materials through the D2L course management program. Each topic assigned is supported by a learning module, where you will find readings, lecture presentations, videos, exercises, and links to quizzes and assignments corresponding to the learning module. Your learning will depend on timely, and successful completion of assignments according to the schedule of classes below.

Live-Online Schedule of classes:

WEEK/DATE	Module	Торіс	LESSON ASSIGNMENT	ASSIGNMENTS DUE DATE
	1	Feeding the World		
1/ Jan. 13	1-1	Course Introduction	Assn. 1 [20 pt]	
2/ Jan. 18			to page	
2/ Jan. 20	1-2	Population Predictions	Quiz 1 [30 pt]	
3/ Jan. 25	1-3	Climate Change	Assn. 2 [20 pt]	Assn. 1 due 1/25
3 /Jan. 27	1-4	Climate Action	Assn. 3 [20 pt]	Quiz 1 due 1/27
4 /Feb. 1	1-5	Urban Trees and Climate		Assn. 2 due 2/1
4/Feb. 3	1-6	Origins of Agriculture	Quiz 2 [30 pt]	Assn. 3 due 2/3
5/ Feb 8	1-7	Conventional Agriculture		·
5/Feb. 10-14	Midterm 1	Lectures 1-7	Exam 1 [50 pt]	Exam I Due Feb. 8 th
5/Feb. 10	2-8	Breeding and Genetics	Quiz 3 [30 pt]	
6/Feb. 15	2-9	Genetically Modified Organisms	Assn. 4 [20 pt]	
6/Feb. 17	2-10	Organic Agriculture		Quiz 3 due 2/17
7/Feb. 22	2-11	Sustainable Production Systems	Quiz 4 [30 pt]	Assn. 4 due 2/22
7/Feb. 24	2-12	Global Water Use	Quiz 5 [30 pt]	
			Assn. 5 [20 pts]	
8/Mar. 1	2-13	Water and Agriculture	Quiz 6 [30 pt]	Quiz 4 due 3/1
8/Mar. 3	2-14	Fertilizers: Are we destroying the environment?	Quiz 7 [30 pt]	Quiz 5/Assn. 5 due 3/3
9/Mar. 8	2-15	Food Waste: Supply chain to consumer		Quiz 6 due 3/8
9/Mar. 9-13	Midterm 2	Lectures 8-15	Exam 2 [50 pt]	Exam II Due Mar. 13 th
	Module 2	Fueling the World		
10/Mar. 10		University Reading Day – No Classes		Quiz 7 due 3/10
10/Mar. 15	3-16	Energy	Quiz 8 [30 pt]	
10/Mar. 17	3-17	Oil and Gas Power	Quiz 9 [30 pt]	
11/Mar. 22	3-18	Coal Power	Quiz 10 [30 pt]	Quiz 8 due 3/22
11/Mar. 24	3-19	Wind Power		Quiz 9 due 3/24
12/Mar. 29	3-20	Solar Power	Quiz 11 [30 pt]	Quiz 10 due 3/29
12/Mar. 31	3-21	Bioenergy Power		
13/Apr. 5	3-22	Nuclear Power	Assn. 6 [20 pt]	Quiz 11 due 4/5
13/Apr. 7-11	Midterm 3	Lectures 16-22	Exam 3 [50 pt]	Exam III Due Apr. 11th
	Module 3	Housing the World		
14/Apr. 12	4-23	Urban Planning and Land Use	Quiz 12 [30 pt]	Assn. 6 due 4/12
14/Apr. 14	4-24	Green Infrastructure	Quiz 13 [30 pt]	
15/Apr. 19	4-25	Housing Past and Present	Quiz 14 [30 pt]	Quiz 12 due 4/19
15/Apr. 21		University Reading Day – No Classes		Quiz 13 due 4/21
16/Apr. 26		No Class Today		Quiz 14 due 4/26

17/May. 7-13	Final Exam	Lectures 22-28	Exam 4 [50 pt]	May 13 th at 11:59pm
17/May. 6		University Reading Day – No Classes		
				Assn. 7 due before class
17/May. 5	4-28	Constructing Your Resilient Future		Quiz 15 due 5/5
17/May 3	4-27	Retrieving, reflecting, and applying course learning	Assn. 7 [20 pt]	
16/Apr. 28	4-26	Sustainable Building and Design	Quiz 15 [30 pt]	

Course Materials:

Course materials can be found in D2L under PLS 170C3. If you are unfamiliar with D2L, go to http://d2l.arizona.edu/ To access D2L, enter your netID login and password, go to "My Academic Courses" If your course does not appear: a. Click on the down arrow beside the current semester, b. Click on the down arrow beside the department name, and then, c. Click on your course name. If you have difficulty with D2L, please read the D2L Tip Sheet at http://eebweb.arizona.edu/faculty/dornhaus/courses/d2l%20tip%20sheet%20students.pdf. Problems using D2L can also be reported using this Web link http://help.d2l.arizona.edu/node/153. Additionally, you can contact UITS 24/7 at: http://uits.arizona.edu/departments/the247 or directly at - (520) 626-TECH (8324).

Textbooks:

No textbooks are required for this course. All readings will be provided to you in accessible format within each learning module on D2L. Readings will include: abstracts and articles scientific journals, popular journals, news outlets, websites, and textbook chapters. Suggested websites and supplemental readings that you may want to review are listed below. Excerpts from these will be provided as "supplemental" readings in each module along with the required readings to allow you to dig deeper as you may wish to do.

- Sustainable Agriculture Reviews Vol. 7 -Genetics, Biofuels, & Local Farming (2011)
 Series Editor Eric Lichfouse
- Sustainable Agriculture Vol. 2 (2011)
 Editors Eric Lichfouse, Marjolaine Hamelin, Mireille Navarrete, & Philippe Debaeke
- World Population to 2300 United Nations (2003)
 https://www.un.org/en/development/desa/population/publications/pdf/trends/WorldPop2300final.pdf
- Science Daily: http://www.sciencedaily.com/news/plants animals/biotechnology/
- Genetic Literacy Project Daily News: info@geneticliteracyproject.org

Evaluation: Your course grade will be based on quizzes, exams, and writing assignments.

Assignment	Value
Exams (4 @ 50 pts ea)	200 pts
Assignments (7 @ 20pts ea)	140 pts
Participation (20 @ 5 pts ea)	100 pts
Quizzes (15 @ 30pts ea)	450 pts
Attendance (15 @ 5 pts each)	60 pts
Total Points Possible	950 pts

Grading Structure:

- > 90.0 % = A Achievement that is outstanding relative to the level necessary to meet course requirements.
- > 80.0 % = B Achievement that is significantly above the level necessary to meet course requirements.
- > 70.0 % = C Achievement that meets the course requirements in every respect.
- > 60.0 % = D Achievement that is worthy of credit even though it fails to fully meet the course requirements.
- < 59.9 % = E Work throughout the semester falls short of course objectives or was not completed.

Assignments, Quizzes and Exams: There will be 7 written assignments required for homework credit. For each, you will be required to complete readings and activities in the learning module before submitting the writing assignment. Participation assignments will use the discussion forums, or submitted as MS Word or PDF files in the Assignments box of D2L. A rubric will be provided for each assignment to guide your work. Writing assignments for both homework and participation assignments must be turned in by the required date and time. No late work is accepted except for documented medical reasons or other university excused absence.

General course expectations:

Students should expect to spend 6-9 hours per week on work related to this course, including readings, lecture, assignments, participation, and guizzes.

My Communication Plan (Please refer to this for specific information on contacting me)

Announcements: Check D2L Announcements each day to stay up to date. I will post news relating to learning modules, assignments, exams, grading progress etc. there2-3 times each week.

Email: Please send emails to me when the nature of the email relates to personal or private academic issues. I check email every day of the work week (M-F) and will reply to emails during regular business hours within 24 hours of receipt. If an email is sent on the weekend (Saturday and Sunday), I will reply to it before Tuesday morning of the following week.

Office Hours: If you wish to meet in "person", please contact me by email. To ensure my availability and adequate time to address your questions or concerns, please send me an email to set up an appointment. In your email indicate a few blocks of time you have available that week to meet and I will reply within 24 hours to confirm a common time and provide a link to a zoom meeting for office hours. We will meet in my personal zoom room at https://arizona.zoom.us/j/5206211582

If there is an urgent need to contact me, you may contact me by phone at the number posted in the syllabus. I may not take calls received outside of normal business hours (8am – 5pm) but I will return your call within 24 hours if you leave a message with a return phone number.

Discussion Boards: When you have questions of relevance for the entire class (ie. inquiries about assignments etc.), please use the D2L discussion forum I have set up for the class called "Ask Prof. Quist". Here, I will respond to your questions and comments at the end of each day for your and all class members' benefit.

Assignment Feedback: I will complete all grading and provide individualized feedback to you within one week after an assignment is submitted. When feedback is relevant to the whole class, I will post an announcement an send feedback to the class list by email. For quizzes that are administered and auto-graded by D2L, you will receive detailed feedback for each question you answer upon completion of the quiz.

Grades Posting: Grades will be posted immediately after each assignment is graded (within one week after the assignment was submitted).

Course Policies:

Extra Credit Policy: There is no extra credit scheduled for this course.

Late Policy: Assignment due dates are firm. Please plan ahead to ensure you submit your work as per the course schedule. For medically excused or other university excused absences, please provide documentation of the absence to the TA so that the assignment deadlines in D2L can be adjusted for you.

Attendance Policy: Attendance will be taken according to Zoom reports of registered users. Be sure your name is listed accurately on the zoom screen each session to earn credit for attending. If you are joining the live sessions by phone, email the TA to indicate a name associated with the phone number used to call in. Attendance will be taken randomly 10 time so as to reward regular attendance while allowing flexibility for periodic absences without significant negative impact to your grade.

Class Recordings: Live online sessions will be recorded. Lecture recordings will be provided in the D2L Learning Modules for your reference in learning, as well as for use with associated participation activities. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.

Missed Classes or Exams Policy: Students will not be allowed to make-up an exams except for documented extenuating circumstances. Students will not be allowed to make-up exams for non-academic reasons (e.g. family vacation, early holiday travel) except when prior approval is granted from the instructor.

Incomplete Grade Policy: Incomplete grades will be given only in special circumstances as outlined in university policy as stated in "The University of Arizona Record General Academic Manual".

University Academic Integrity Policy: Students are encouraged to share intellectual views and discuss freely the principles and application of course materials. However, all graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA code of Academic Integrity as described in the UA General Catalog. See:

http://deanofstudents.arizona.edu/codeofacademicintegrity .

Policy on Threatening Behavior: The University seeks to promote a safe environment where students and employees may participate in the educational process without compromising their health, safety or welfare. The Arizona Board of Regents' Student Code of Conduct, ABOR Policy 5-308, prohibits threats of physical harm to any member of the University community, including to one's self. Threatening behavior can harm and disrupt the University, its community and its families. Please see the following document for more information: http://policy.arizona.edu/threatening-behavior-students

Statement of Copyrighted materials: Students are advised that all lecture notes, lectures, study guides and other course materials disseminated by the instructor to the students, whether in class or online, are original materials and as such reflect intellectual property of the instructor or author of those works. All readings, study guides, lecture notes and handouts are intended for individual use by the student. Students may not distribute or reproduce these materials for commercial purposes without the express written consent of the instructor. Students who sell or distribute these materials for any use other than their own are in violation of the University's Intellectual Property Policy (available at http://techlaunch.arizona.edu/university-arizona-intellectual-property-policy. Violations of the instructors copyright may result in course sanctions and violate the Code of Academic Integrity.

Confidentiality of Student Records: Students should have read and be aware of federal regulations regarding the privacy of their academic records. http://www.registrar.arizona.edu/ferpa/default.htm.

Student Support:

Accessibility and Accommodations: At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation.

Course Withdrawal: Students withdrawing from this course must execute drop or withdrawal procedures in accordance with the UA General Catalog (see http://catalog.arizona.edu/ for official dates).

Academic advising: If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the <u>Advising Resource Center</u> can guide you toward university resources to help you succeed.

Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The <u>Dean of Students Office</u> can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

Subject to Change Statement: Information contained in the course syllabus, other than the grade policies, may be subject to change with reasonable advance notice, as deemed appropriate.