PLANTS AND HUMAN CULTURE Winter 2023
BIOL315
Credits: 3.0
Modality: In-person classes and discussions

COURSE DESCRIPTION

Plants are the foundation of life on Earth. Humans, in particular have evolved in very close association with flowering plants. They have altered our genetic and cultural evolution and we have altered theirs. This course explores and intimate and dynamic relations between plants and humans. In addition to discussing the biology and evolution of many of our most valuable economic plants, and delving into the science of plant culture, domestication and genetic manipulation, we consider how plants have altered human cultures. We will also explore a variety of current and controversial issues involving our use of plants. Students in this course will come away with a clearer understanding of how integrated human lives are with plants. As a student in Biology 315 you will use agricultural and culturally significant plants as a vehicle for advanced training in fundamental Mendelian genetics, quantitative genetics, genomics, biotechnology, ecology, evolution and quantitative skills. As overarching goals, we will promote critical thinking about scientific endeavors and improve your comprehension and writing skills. To these ends the course uses a mixture of lectures, readings, class discussions, exams, and a creative group project.

Course Instructor

Dr. Sarah Yakimowski (Lecture Instructor, Department of Biology)

TAs

TBA

Please contact sarah.yakimowski@queensu.ca if you have questions about the course.

STUDY HABITS FOR SUCCESS

As a smaller (max 70 students) upper-year course, we have the opportunity to cover a wide range of topics related to plant-human interactions. Being a Biology course we are focused on applying biological sciences to answer key research questions. But we also have an opportunity to bring social, political, and environmental issues into our discussions around the complexity of issues. Keys are success in this course include:

-Stay on top of weekly class material and use quizzes as an opportunity to 'check in' with your understanding.

-Come to a student help session to discuss any questions you may have

-Actively participate in class discussions (dedicated classes, and small 'breakout' discussions during lecture)

-Reflect on your own interests in preparation for the final group projects to maximize your engagement – this is an opportunity to be creative!

IMPORTANT UNIVERSITY DATES

Jan. 9	Classes start
Feb. 3	Last day to drop courses
April 10	Classes end
April 14-28	Winter Term Final Assessment period

Plants and Human Culture
Syllabus
Winter 2023

EQUITY, DIVERSITY & INCLUSIVITY STATEMENT

Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect and systemic discrimination exists within our institutional structures, policies and practices and in our community. These take many forms and work to differentially advantage and disadvantage persons across social identities such as race, ethnicity, disability, gender identity, sexual orientation, faith and socioeconomic status, among other examples. We are committed to continual examination of our practices and ongoing change to improve equity, diversity and inclusion in our community.

LAND ACKNOWLEDGEMENT

Let us acknowledge that Queen's is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to be live, learn and play on these lands. (Four Directions Indigenous Student Centre, Queen's University)

EXPECTATIONS

For Instructors

As an instructor I am committed to:

Engagement with the course material – I love finding ways to navigate the sometimes complex course material, and to share my passion for plant-human research and related topics!

The student learning experience – I aim to create a variety of opportunities for students' to interact with the course material.

The process of learning – mistakes and practice are an important part of learning

the material, and 'learning how to learn', more generally. I am here to help you navigate this experience as you enter the senior years of program.

Respectful communication – I look forward to communicating with you in person (in class) and in weekly student help sessions.

Differences in learning – I apply universal design to account for differences in learning where possible, and arrange additional accommodations in collaboration with the Queen's Exam Office and QSAS. I am always open to discussion and acknowledge that a complex set of factors affect your learning – I will work to support your education.

Challenges – Please discuss your challenges with me during class or student help sessions. You can always reach me at sarah.yakimowski@queensu.ca.

For Students

To achieve teaching and learning success, my expectation of students includes:

Preparation for classes and discussions as specified. Class material may include readings, videos or other materials that we will further interrogate in class and through class discussions with your peers.

Preparation of necessary technology for participation in final group project

Attendance and participation in class and discussions to the best of your ability

Respectful communication and interactions with all class members, teaching assistants and instructors – I acknowledge that group work often comes with challenges, but there is also a lot of opportunity to learn from one another and to share your strengths.

Academic integrity with respect to all course assignments and examinations

LEARNING OUTCOMES

After completing this course, students should have the knowledge and skills to do the following:

1. Appreciate the biological diversity of plants that have provided food, clothing, fuel, building materials, and inspiration to human cultures.

2. Integrate and apply fundamental concepts and knowledge in genetics, evolution, physiology ecology acquired over core biology courses to the major questions concerning how humans and plants have influenced each other's ecology and evolution.

3. Identify the similarities and differences in how plant biology, changing environments and human culture resulted in the domestication of different globally important food plants.

4. Explain how modern experimental and genomic techniques have been used to understand the key evolutionary changes in economically important plants spurred by human cultivation.

5. Express an informed opinion informed by science concerning current controversies surrounding our use and genetic modification of utilitarian plants.

6. Analyze how individual choices in the types of plant-based products individuals use scale up to global effects on human health and the environment.

7. Review and synthesize information from the primary scientific literature to effectively present an important issue in plant-human interactions in a way that the general public can readily understand.

8. Anticipate how altered use of plants by humans will impact the sustainability of human civilization.

COURSE TOPICS AND SCHEDULE

Week / Lecture Topic	Class topics	Other materials	Assessments
Week 1 Week of Jan 9	Course Introduction +		
	Rise of Agriculture Topics: The Agricultural (R)evolution Study of Agricultural Origins The Rise of Agriculture		
Week 2	Domestication + Intro to Indigenous Worldview		
	Retrospective Genetics Topics: -Domestication -QTL Mapping -Genomic Scans	Discussion #1 Materials posted	
Week 3	**Discussion #1: GMOs**		Discussion #1 Questions and Summary (submit end of class, or by 10am next day)
	Genetic modification		Quiz#1 posted Thursday 9am

	Topics: -Genetic Modification by Selective Breeding -Genetic Modification with Foreign Genes -Gene Editing		(24hr) – weeks 1, 2
Week 4	Polyploidization and domestication Survey re: final group project		
	Topics: -Wheat and Bread -Wheat Domestication -Domestication of Other Cereals	Discussion #2 Materials Posted	
Week 5	**Discussion #2: Diet and Climate Change** + Group work project proposal		Discussion #2 Questions and Summary (submit end of class, or by 10am next day)
	Domestication Cont'd Topics: -Rice -Maize -Fruits		Quiz#2 posted Thursday 9am (24hr) – weeks 3, 4
Week 6	Final Project Group Work		
Thurs Feb 17	Domestication cont'd Topics: -Tomato	Discussion #3 Materials posted	Final Project Proposal Due Friday @ 5pm

	Domestication -Tomato Genetic Modification -Brassicas		
Feb 21-25 READING WEEK			
Week 7 Mar 1	**Discussion #3 – Braiding Sweetgrass (excerpt)**		Discussion #3 Questions and Summary (submit end of class, or by 10am next day)
	Topics: -Sweetness -Bitter history of sugar -Stimulation		Quiz#3 posted Thursday 9am (24hr) – weeks 5, 6
Week 8 March 8	**Midterm** (during scheduled Tues class time)		Midterm test in class + accommodations
	Seed Banks and Resurrection Biology	Discussion #4 Materials Posted	
Week 9 March 15	**Discussion #4 – Organic methods and food production** ***review revised Final Project rubrics**		Discussion #4 Questions and Summary
	Psychoactive plants		Quiz#4 posted Thursday 9am (24hr) – weeks 7, 8
Week 10 March 22	Herbicide resistance evolution and integrated pest		

	management		
	Topics: -African Bottle Gourd -Wood / Forests -Burning Wood -Tone woods	Discussion #5 Materials posted	
Week 11 March 29	**Discussion #5 – Legalization of Cannabis**		Discussion #5 Questions and Summary
	Group Project Presentations		Quiz#5 posted Thursday 9am (24hr) – weeks 9, 10 Group Projects due Friday @5pm
Week 12 April 5	Group Project Presentations (Tues class)		
	Group Project Presentations (Thurs class)		

Plants and Human Culture
Syllabus
Winter 2023

COURSE MATERIALS

All course materials required for class and discussions will be available via OnQ.

SUGGESTED TIME COMMITMENT

Students can expect to spend approximately **8-9** hours a week in study/ preparation for class and group activity for this course.

- Class / discussion preparation: 3 hours
- Class / discussion: 3 hours
- Group work: 2-3 hours

WEIGHTING OF ASSESSMENTS

Online Quizzes	Every 2 weeks (x5)	2.6% each x5	13%
Class Discussion Written questions + summary	Every 2 weeks (x5)	3.4% each x5	17%
Final Group Project (30%)	Proposal		5%
	Project		20%
	Self/group assessments		5%
Midterm			15%
Final Exam	TBA		25%
			Total 100%

Location and Timing of Final Examinations

Winter 2023 Arts and Science final exams will be administered to students as follows:

> "Students taking on-campus courses will write their proctored final exams in-person and on-campus."

The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar's webpage. A detailed exam schedule for the Fall Term is posted before the Thanksgiving holiday; for the Winter Term it is posted the Friday before Reading Week, and for the Summer Term the window of dates is noted on the Arts and Science Online syllabus prior to the start of the course. Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel / holiday plans or flight reservations.

ASSESSMENTS AND ACTIVITIES DESCRIPTION

Online Quizzes

Online quizzes (every 2 weeks) are designed as a check-in for your comprehension of course material. The quizzes start at a fixed time (see Timeline for dates and times) and are done online. The quizzes are designed to take 20-30 minutes to complete but everyone can take up to 90 minutes to complete the quiz. It is the responsibility of the student to ensure that they are using a reliable computer and internet connection, and are working in a physical space that is amenable for the quiz.

Weekly Preparatory Quizzes

There are 11 quizzes, each open for a week (see Timeline for dates and times). The quizzes will consist of multiple-choice questions based on the weekly material from e-book modules, self-assessments and the software skills guide (when applicable). You can take the quiz up to 5 times. Your highest mark will be recorded as your mark for the quiz.

Class Discussions: Submitted questions and Discussion Summary

There are 5 in-class group discussions in the course. Material (primarily readings, occasionally videos) will be provided the week prior to the discussion. The reading material will introduce a variety of complex plant-human interaction topics. Students will prepare 3 questions to motivate group discussion before coming to class. Discussion questions will be submitted for evaluation via OnQ. During the class discussion, students are invited to have an open, wide-ranging, and respectful discussion as a group of peers. The final 20-30 minutes of class will be devoted to quiet focused-writing time during which students will write a 2-3 paragraph summary of the group's discussion. Summaries can be submitted via OnQ at the end of class, or by 10AM the following day for any student wishing to take more time.

Midterm

A term test will cover material for the first half of the course (weeks 1-6). The test will consist of short and longer answer questions (ranging from 2 to 6 marks per question). The term test will focus on material from the in-class lectures and associated materials. The term test is designed to be written in ~60 minutes and all students have 90 minutes to write the exam. A single-size page (8.5 x 11") of notes is allowed.

Final Exam

The Final Exam is three hours in length and includes short and longer answer

questions based on the material from the entire term including all class material. Material associated with class discussions and the final group project will not be examined directly (ie: will not ask specific details), but this material could be used to answer more general long-answer questions. A single-size page (8.5 x 11”) of notes is allowed.

Final Group Project

Students will have the opportunity to fill out a survey on their personal topics of interest, and any preferences for mode of communication (e.g. a written project, a visual project, a multi-media project etc.). Once groups are formed each will write a short project proposal and receive feedback. Groups will then proceed to prepare their final project. All projects will be ‘presented’ in-class during the final 2 weeks of class. These projects are an opportunity for students to lean into their strengths, and explore plant-human topics of interest.

Exam Dates

The specific dates for each exam will be announced later in the term by the Registrar’s office. Once the exam schedule has been finalized the exam date will be posted on your SOLUS account.

Please note that the Senate Policy on Academic Consideration for Students in Extenuating Circumstances is applicable during the final examination period. In the Faculty of Arts and Science, students who are too ill to write the examination or are experiencing extenuating circumstances are being directed to the Academic Consideration Request Portal (ACRP) to submit a request for consideration.

Assessment Accommodations

Queen's University supports Universal Instructional Design to create more accessible learning environments. In addition to incorporating a variety of delivery methods and learning materials, this course has several academic accommodations built directly into the assessments. For most students, the assessment design incorporates extra time on assignments/tests and computer-assisted examinations.

If you have a formal academic accommodation that goes beyond the accommodations described below, please see the course homepage and click the blue "Submit QSAS Accommodation Letter or STAA Form" button. You may read more about our approach to academic accommodations and considerations in the relevant sections of the course syllabus (see Policies below).

I will gladly work with you to ensure that any accommodations required beyond the universal design are implemented.

Deferred Final Exam - Students receiving permission to write a deferred final exam will be expected to write their exam during the Faculty of Arts and Science deferred exam period with exact time, date, and location TBA. Requests for individualized deferred exam dates will not be accommodated. The deferred exam is considered an official exam to which all the exam regulations apply.

LATE POLICY

For deadlines associated with the class discussion summaries and components of the final project the late penalty is 10% per day and this is first applied 30 mins after a deadline.

GRADING

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59

D	53-56
D-	50-52
F	49 and below

COURSE FEEDBACK

At various points during the course, students may be asked to take part in a variety of feedback activities (such as questionnaires and exit tickets). This feedback enables the team to make any adjustments necessary to improve the learning environment. All surveys are anonymous, and directly related to activities, assessments, and other course material.

N/ETIQUETTE

In any course you often communicate with your peers and teaching team through electronic communication. You are expected to use the utmost respect in your dealings with your colleagues or when participating in activities, discussions and online communication.

Here is a list of n/etiquette guidelines. Please read them carefully and use them to guide your communication in this course and beyond.

1. Make a personal commitment to learn about, understand, and support your peers.
2. Give others the benefit of the doubt.
3. Ensure your writing is respectful and inclusive.
4. Recognize and value the experiences, abilities, and knowledge that each person brings.

5. Recognize and value the diversity of learning and communication styles.
6. Carefully re-read your writing before posting or sending to others.
7. It is okay to disagree with ideas, but personal attacks will not be tolerated.

QUEEN'S EMAIL

The University communicates with students via Queen's email. Please check your email regularly to ensure you do not miss important information related to your course.

COURSE ANNOUNCEMENTS

Throughout the course, I will routinely post course news in the Announcements section of the course homepage. I encourage you to actively check the course onQ main page for course announcements throughout the semester for reminders and additional course information or learning opportunities.

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ACCESSIBILITY/ACCOMMODATIONS

Queen's University is committed to achieving full accessibility for all students. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at Senate in November 2016.

If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the Queen's Student Accessibility Services (QSAS) and register as early as possible. For more information, including important deadlines, please visit the QSAS website (click here).

To register your academic accommodation for this course, please select the Accommodations button on the course homepage and follow the instructions.

ACADEMIC CONSIDERATIONS FOR STUDENTS IN EXTENUATING CIRCUMSTANCES

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to complete academic requirements related to a course for a short period of time. Click here to view the Senate Policy on Academic Consideration for Students in Extenuating Circumstances.

Please see the Academic Consideration Requests button on the course homepage to apply for an academic consideration in this course. Note that you will be taken to the student request portal where you will be required to provide the name and email address of the instructor/coordinator. For this course, please be sure to use the following email address: in2stats@queensu.ca.