

Syllabus: HCS 5411

Domestication & Utilization of Agronomic Crops Spring 2024



Meeting Dates and Locations

Lectures: Two 55-min in-person lectures each week.

- **Lecture 1:** 334 Kottman Hall. Tuesdays 1:50 – 2:45 pm
- **Lecture 2:** 334 Kottman Hall. Thursdays 1:50 – 2:45 pm

Labs: Beginning the first week, in-person Lab sections will meet as follows

- **Lab 1:** Howlett Hall Greenhouse Room G117 Thursday, 9:20–11:20
- **Lab 2:** Howlett Hall Greenhouse Room G117 Thursday, 11:35-1:35

Course Format

Currently HCS 5411 is scheduled for in-person lectures.

Labs are in-person. Following university guidelines, adjustments may become necessary later.

Instructors

Osler Ortiz ([Instructor](#))

214 Williams Hall, Wooster Campus (*home office*)

268 Kottman Hall, Columbus Campus (*Tuesdays*)

Email: ortez.5@osu.edu || Phone: (330) 263-9725

Office hours - by appointment. *Email is the preferred method of communication.*

Bruce Ackley ([Lab Instructor](#))

223 Kottman Hall, Columbus

Email: ackley.19@osu.edu || Phone: 614-292-1393

Office hours – by appointment. *Email is the preferred method of communication.*

Fabiano Colet ([Teaching Assistant](#))

300 Kottman Hall, Columbus

Email: colet.1@osu.edu || Phone: 614-981-6221

Office hours – by appointment. *Email is the preferred method of communication.*

Prerequisites: 2201, 2201E, 2202, or 2202E, and Biology 1101, 1113, or 1113H.

Course Description

A study of the domestication and utilization of grain, oilseed, and fiber crops. Emphasis will be placed on crop origin, domestication, and evolution as they relate to current and future efforts at crop modernization and utilization.

Goals

To gain a fundamental understanding of the historical development and scientific principles underlying crop domestication and utilization, and how they impact current and future development and utilization of selected grain, oilseed, and fiber crops.

Learning Outcomes

Successful students will have the ability to:

- Demonstrate competency in critical thinking and research (Dept. Objective 1)
- Reinforce concepts learned in previous course work on the physiological basis of sustainability and sustainable practices (Dept. Objective 2)
- Integrate fundamentals of physical and biological sciences in the context of sustainable plant systems (Dept. Objective 3)
- Appreciate the necessity of life-long learning and using evaluation and synthesizing skills (Dept. Objective 6)
- Additional Graduate Goals: Demonstrate scientific competence in horticultural and/or agronomic sciences (Program Learning Goal 1)
- Additional Graduate Goal: Appreciate diversity issues within horticultural and/or agronomic sciences (Program Learning Goal 2)

Content Topic List

- The major agronomic crops covered in HCS 5411 include corn, soybean, wheat, barley, oat, canola, cotton, hemp, rice, peanut, and selected pseudocereals (e.g., quinoa, amaranth, chia).
- The following list of topics will be covered for each crop:
 - Crop origin, domestication, and history of culture
 - Crop growth and morphology
 - Crop production practices, crop products and utilization, and sustainability
 - Recent technological advances and/or issues

Credit Hours and Expectations

This is a **3-credit-hour course**. According to [Ohio State policy](#), students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

Textbooks/Readings

Ohio Agronomy Guide, 15th edition. Bulletin 472.

Available in PDF format on Carmen page and as [hard copy here](#) (\$15.75).

HCS 5411 Course Schedule (*adjustments may be necessary*)

Week	Lecture Topics and Labs
Week 1 (Jan. 8 - 12)	Origins of Agriculture Corn – Origin and Domestication <u>Lab:</u> Introduction to HCS 5411 Lab Lab logistics and greenhouse setup Corn GDD Planting & Experimental Setup Crop Planting Depth Experiment Setup
Week 2 (Jan. 15 - 19)	Corn – Classification, Morphology, and Modernization Corn – Growth Stages and Maturity Rating <u>Lab:</u> Seed Deterioration Experiment Setup Crop Seedling Stress Response Experiment Setup
Week 3 (Jan. 22 - 26)	Corn – Production Practices Corn – Products and New Developments <u>Lab:</u> Crop Planting Depth Expt. results worksheet
Week 4 (Jan. 29 - Feb. 2)	Soybean – Domestication and Morphology Soybean – Maturity, Staging, and Production <u>Lab:</u> Seed Deterioration Results – worksheet <u>Lab:</u> Broadleaf Crop Identification
Week 5 (Feb. 5 - 9)	Soybean – Uses and New Developments Wheat – Domestication and Classification <u>Lab:</u> Crop Seedling Stress Response results worksheet <u>Lab:</u> Grass Crop Identification <u>Quiz</u> Broadleaf Crop Identification
Week 6 (Feb. 12 - 16)	Wheat – Products and Future Developments Wheat – Morphology, Growth, and Production Practices <u>Lab:</u> Broadleaf and Grass Crops Seed identification worksheet <u>Quiz</u> Grass Crop Identification
Week 7 (Feb. 19 - 23)	Midterm Exam 1 Midterm: introduction, corn, soybean (weeks 1 to 5) Oat – Origin, Classification, Production, Uses <u>Lab:</u> LABORATORY PRACTICAL 1
Week 8 (Feb. 26 - Mar. 1)	Barley – Origin, Growth, Production, Uses Hemp – Origin, Growth, Production, Uses Abnormal Corn Ear Development – worksheet

Week 9 (Mar. 4 - 8)	Sunflower – Origin, Growth, Production, Uses Canola – Origin, Growth, Production, Uses Harvest Corn GDD experiment and put samples in drying oven <u>Lab</u> : Crop Growth Staging: Soybean, worksheet <u>QUIZ</u> over Abnormal Corn Ears
Week 10 (Mar. 11 - 15)	NO CLASS - SPRING BREAK NO LAB - SPRING BREAK
Week 11 (Mar. 18 - 22)	Pennycress - Origin, Growth, Production, Uses Cotton – Origin, Growth, Production, Uses <u>Lab</u> : Crop Growth Staging: Corn, Wheat worksheet <u>Both lab sections should weigh your dried corn samples this week and record the data (do this on your own during the week – scales are available in the Howlett headhouse area near the oven)</u>
Week 12 (Mar. 25 - 29)	Midterm Exam 2 Midterm: wheat, oat, barley, hemp, sunflower, canola (weeks 5-9) Rice – Origin, Development, and Morphology (optional, on Carmen) Rice – Production, Products, and Advances <u>Lab</u> : Soybean nodule and nematode cyst characteristics worksheet Review data analysis and report preparation; review for lab practical 2
Week 13 (Apr. 1 - 5)	Pseudocereals and “Ancient Grains” – an Overview Peanut – Origin, Domestication, Production, Uses, Advances <u>Lab</u> : LABORATORY PRACTICAL 2
Week 14 (Apr. 8 - 12)	Crop Diversification and Cover Crops Ohio Crop Performance Testing <u>Corn GDD Report due end of this week</u> : Upload on Carmen
Week 15 (Apr. 15 - 19)	Interpreting Agronomic Data Final Exam Comprehensive (weeks 1-15), more emphasis on weeks 11-14 <u>NO LAB THIS WEEK</u>

Course Component Grading Distribution

COURSE ASSIGNMENT CATEGORY	LECTURE POINT DISTRIBUTION (70 PTS. POSSIBLE)
Problem Sets (2 @ 2.5 pts. each)	5
Midterm Exam 1	17.5
Midterm Exam 2	17.5
Final Exam (comprehensive)	30
Total Points	70

Lab Component Grading Distribution

LABORATORY ACTIVITIES COURSE POINTS	LAB POINT DISTRIBUTION (30 PTS. POSSIBLE)
Lab Quizzes: 3 quizzes x 2.8 pts each	8.4
Lab activity worksheets: 7 worksheets x 1.2 pts each	8.4
Laboratory Practical 1: 3.6 pts	3.6
Laboratory Practical 2: 3.6 pts	3.6
Corn GDD Experiment Final Report: 6 pts	6
Total Points	30 PTS

Grading Scale: The standard grading scale is below. If deviating from the standard grade scale, the grade scale must be complete and span the total possible grades from A to E.

<u>Percentage</u>	<u>Grade</u>	<u>Percentage</u>	<u>Grade</u>
93-100	A	73-76.9	C
90-92.9	A-	70-72.9	C-
87-89.9	B+	67-69.9	D+
83-86.9	B	60-66.9	D
80-82.9	B-	<60	E
77-79.9	C+		

Course technology

For help with your password, university e-mail, [Carmen](#), or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at [OCIO Help Hours](#), and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** (<http://ocio.osu.edu/selfservice>)
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills for online courses

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the [Canvas Student Guide](#).

Technology skills necessary for this specific course

- Zoom text, audio, and video chat

Required equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone

Required software

- [Microsoft Office 365](#): All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through [Microsoft's Student Advantage program](#). Full instructions for downloading and installation is found <https://ocio.osu.edu/kb04733>.
- [Approved browsers](#): Google Chrome or Firefox recommended.

Carmen Access

You will need to use [BuckeyePass](#) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](#) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click “Enter a Passcode” and then click the “Text me new codes” button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](#) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

Evaluation and how grades are calculated

Course grading will be based on the laboratory (30%), two problem sets (2.5% each), two midterm exams (17.5% each), and the final exam (30%). More details on graded lab activities are included in the table titled “Lab Component Grading Distribution” beginning on p.6.

Lecture: All lecture exams will consist of a mixture of objective (e.g., multiple choice, T-F) and short answer/essay questions. The final exam is comprehensive. Problem Set 1 (Corn GDDs, due end of week 4) requires synthesis of lecture topics covered in weeks 1-4. Problem Set 2 (Crop Performance Trials, due end of Week 11) involves calculations requiring synthesis of lecture topics covered in weeks 8-11.

Lab: Lab quizzes will take place during the first part of the lab in which they are scheduled (first 15 minutes) and are based on the previous week’s exercise. Quizzes will require students to view plant or seed samples and answer associated questions. The final lab practical will be comprehensive. Crop Fun Fact lab assignments will be done outside of class and uploaded to a Carmen drop box for grading. Lab worksheets involve answering questions and/or reporting experimental measurements and interpreting results. Worksheets are to be completed during lab and turned in to the instructor during the same lab period. The Corn GDD Final Report will be uploaded to Carmen for grading.

All graded activities and the points associated with each activity are shown below in the HCS 5411 Course Schedule. Firm exam dates for the semester will be announced in lab and posted the first week of classes in the Announcements section located on the HCS 5411 Carmen page.

For all course components, students are expected to maintain the highest standard of academic integrity (see details under **Other Course Policies on p. 8**). ***Any suspected cases of academic misconduct will be reported directly to the University Committee on Academic Misconduct.***

Instructor's policy on late or missed work

- 1. Lecture Exams and Lab Quizzes/Exams:** There will be no make-up exams given except in cases of verifiable participation in university-sponsored academic function or a medical excuse provided by a health care professional.
- 2. Lecture and Laboratory assignments:** Each late assignments will have 10% subtracted from the assignment grade for each day it is late. Regarding missed laboratory sessions and associated activities, there will be no make-up labs for unexcused absences and students will receive a grade of "0" for those missed activities. Students that miss lab activities due to verifiable illness or participation in a university-sponsored academic function will be given the opportunity to make up the activity with no penalty.

COURSE POLICIES

Faculty feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. Remember that you can call **614-688-HELP** at any time if you have a technical problem.

- **Grading and feedback:** For all graded lecture activities, you can expect feedback within **3 days**. For lab work, you can expect feedback within 7 days.
- **E-mail:** I will reply to e-mails within **24 hours on school days**

Attendance Policy: Your attendance and participation are essential for the success of this course. The following is a summary of everyone's expected participation:

In Class Participation: Although weekly class lectures will be posted online for students to view at their convenience during the week, you are expected to attend lectures and Lab weekly. We will often be working with soil, plants, etc. in the greenhouse/headhouse in addition to the lab classroom, so please dress appropriately for the lab. Laboratory course material will be uploaded to Carmen for students to review prior to lab. Laboratory assignments and quizzes will be completed according to the weekly schedule and the lab instructor's directions. Students that miss lab activities due to documentable illness or participation in a university-sponsored academic function will be given the opportunity to make up the activity.

Office hours: Students are welcome to schedule office hours (or Zoom meeting) with the course instructor by appointment if they need additional help with course material.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

Writing style

While there is no need to participate in class discussions or lab worksheets as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality is fine for non-academic topics. Beware not all

students perceive color in the same way. When you use color also use **Bold**, *Italicize* or Underline as emphasis. A good practice is to use the Accessibility Checker in all Microsoft Office 365 products available to all students.

Tone and civility

Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.

Citing your sources

When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)

Backing up your work

Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Quizzes and exams: You will take lab quizzes during your lab period, and lecture exams during lecture period in 334 Kottman.

Reusing past work

In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.

Falsifying research or results

All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.

Collaboration and informal peer-review

The course includes opportunities for formal collaboration with your classmates in the form of the Problem Sets. You're allowed and encouraged to collaborate with classmates in completing the Problem Sets; however, remember that each student is individually responsible for knowing the associated material that will be covered on the lecture exams.

UNIVERSITY POLICIES (<https://ugeducation.osu.edu/faculty-and-staff-resources>)

Academic Misconduct: It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct at [Student Life](http://studentconduct.osu.edu) <http://studentconduct.osu.edu>.

Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](#))
- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](#))
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer: The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the

educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course. Intellectual Property (covered by copyright) includes Course materials (Text, Audio, Video, Multimedia, Sims, Apps, etc.), and Student Generated materials.

Disability Services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Requesting accommodations: If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential. In addition to contacting the instructor, please contact the Student Life Disability Services at [614-292-3307](tel:614-292-3307) or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University. Go to [Office of Student Life - Disability Services](#) for more information.

Accessibility of course technology: This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [Carmen \(Canvas\) accessibility](#)
- Streaming audio and video
- Synchronous course tools
- [Definition OSU](#)
- [Overview of Accessibility at OSU](#)

If you require specific software for the course list or provide a link to the software's accessibility privacy statements

- [Adobe Connect \(Carmen Connect\) Accessibility](#) [Adobe Privacy Policy](#)
- [MediaSite Accessibility Statement](#)
- [Microsoft Office Accessibility](#) [Microsoft Office 365 Privacy](#)
- [Proctorio Accessibility](#) [Proctorio Privacy](#)
- [Top Hat Accessibility](#) [Top Hat Privacy](#)

Diversity: The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy

and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

UNIVERSITY RESOURCES (<https://ugeducation.osu.edu/faculty-and-staff-resources>)

Counseling and Consultation Services: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Title IX: All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources. If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.