PLAS 204
Resource Efficient Crop Management Section 150
Spring 2025
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Instructor
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Student help hours: Mondays 9:50-10:30am, Gooding Center or PLSH 279G, or by appointment

Teaching Assistants
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Course schedule
Mondays & Wednesdays 8:30-9:50am; Gooding Center, Plant Sciences

About the course
The landscape of agriculture is constantly changing. In 2025, producers are under competing demands to sustain their livelihoods, maintain finite soil and water resources for the future, and produce for a shifting consumer marketplace. The development and evaluation of crop management practices requires an ability to integrate the principles from a range of disciplines such as crop and soil science, plant breeding, climatology, and integrated pest management. This is essential to make the most efficient use of natural resources such as sunlight, water, and soil, as well as other external inputs utilized for field crop management.

Course format
PLAS 204 will be offered in a hybrid, flipped classroom format. All lecture content will be available as recorded videos and made available to students at least one week in advance of the respective topics. Monday sessions will typically include a review of the week's materials, including "muddiest points" from lecture videos, and student-led presentations and discussions of agronomy topics in the news. Wednesday sessions will typically include hands-on activities, field trips, and more.

Learning outcomes
As soon to be agricultural and natural resource professionals, you will be tasked with solving complex problems where multiple priorities and considerations will need to be evaluated.
To better prepare you for such challenges, in this course you learn to:

- Describe the basic management (i.e. responsible input use, cultural practices) and natural resource considerations (i.e. temperature, rainfall, sunlight, soil) necessary for agronomic production
- Determine management factors in various cropping systems and evaluate the tradeoffs associated with agronomic recommendations and environmental outcomes
- Synthesize information from news and scientific articles to understand the steps in the scientific process as well as how new scientific knowledge is generated about agriculture
- Utilize the farming simulator tool *APSIM* to aid in crop management decision-making, to develop hypotheses around management changes and predict subsequent outcomes
- Analyze information from crop budgets to determine the impact of management decisions on profitability

In this class, you will have the opportunity to practice many "employability" skills such as effective note-taking, communicating complex scientific material, identifying, and organizing key information in lectures, and using various computer technologies (such as Microsoft Excel, YuJa, and APSIM). Regardless of your future professions, I expect that these will be transferrable skills to many different tasks and employment sectors throughout your careers.

Grading

Assignment	**Due dates and times***	**Points**
Syllabus quiz	Friday, January 24	25
Weekly quizzes	Due typically on Mondays by 11:59pm 11 weeks, 15 points each, lowest score dropped	150
In-class participation	15 weeks in class twice weekly – 5 points per class, lowest two scores dropped	140
Field trip synthesis	Submitted within one week of the trip	50
Agronomy in the news presentation	Submitted once during semester	25
Scientific article review	Topic Selection: Sunday, February 16 Video Summary: Sunday, February 23	100
Crop budget assignment	Sunday, March 30	85
Farming simulation assignment	Sunday, May 4	75
Final Exam	Finals week	100
Total		750

***Subject to change**

Grading system

Grade	Percentage	Grade	Percentage
A+	98.0 – 100.0%	**C+**	78.0 – 79.9%
A	92.0 – 97.9%	**C**	72.0 – 77.9%
A-	90.0 – 91.9%	**C-**	70.0 – 71.9%
B+	88.0 – 89.9%	**D+**	68.0 – 69.9%
B	82.0 – 87.9%	**D**	62.0 – 67.9%
B-	80.0 – 81.9%	**D-**	60.0 – 61.9%
		F	59.9% or less

Course engagement

I ask all students in the course is to prioritize your health and safety as well as the health and safety of the teaching team, your classmates, and the broader community. Please plan to communicate with the teaching team if you are not feeling well or struggling in any other way. *We are here to help everyone succeed in the course!* Although in the past we have made some in-class sessions available by Zoom as needed for students, we have now created an entirely online section of this course. As a result of having enrolled in an in-person section, we hope to see you in class as frequently as possible and will assess points for engagement and participation for every in-person session (with two of the lowest scores dropped for course points). If you will not be able to come to class, you should cc or email directly with teaching assistant Blake Hansen (bhansen29@huskers.unl.edu) who will be responsible for recording points associated with in-class engagement. *We understand that students will have "excused" or reasonable explanations for missing class, including illness or trips associated with the university for your professional development. After an absence you will have up to one week to complete the daily assignment for credit.* As a teaching team, we strive to be as accommodating as possible but need you to communicate your needs and challenges with us.

As in other aspects of life, you will get out of this course what you put into it! This means that your participation and engagement is essential. In addition, YOU bring a tremendous amount of life experience and practical knowledge into the classroom. I want you to share that with me and other students and you will be given many opportunities to do so through in-class activities and discussions. In in my experience thus far teaching the course, students with greater attendance tend to receive higher grades. Arriving late to class on rare occasion will be excused but I ask that you make every effort to arrive on time so as not to distract your classmates or to miss important content at the beginning of class. While every session that we meet is important, the schedule notes several dates (for example: outdoor activities and farming simulation activities) where attendance should be prioritized. I understand that personal situations arise, but please plan to notify the teaching team as soon as possible if you cannot engage in class.

Classroom climate

Thoughtful, critical, and respectful participation is not only encouraged, it is expected. I understand that participating in class can be a challenge for some, and so I ask us all to be responsible for creating a class atmosphere of mutual trust and respect so that everyone's questions can be expressed and constructively addressed. Any behavior in class that violates this will result in a grade penalty and/or removal from class at our discretion.

Final exam
The final exam will be comprehensive, covering all material throughout the semester, administered during finals week, in person. It will be primarily essay based and potential topics/questions will be made available to students early in the semester. We will allow one page (front and back if you choose) of notes that can be used for the final exam. Unless there is an illness orunforeseen situation, the exam *cannot* be rescheduled. In general, please reach out to the teaching team far in advance about any conflicts that you may have with any quizzes, exams, assignments, or class attendance in general.

Quizzes
There will a weekly timed quiz administered on Canvas covering the material in the lecture videos. These will always be due on Mondays at 11:59pm and will have a set time limit of 20 minutes. We will have eleven throughout the semester (15 points each) with the lowest quiz score dropped. Late quizzes will not be accepted. You are expected to work independently on the quizzes. If we discover academic integrity concerns such as directly copying work from other students, for quizzes or any other assignments, you will receive a zero for the quiz and possibly further penalty, at the teaching team's discretion.

Course textbook, farming simulation manual, and other reading materials
There will be a manual for the farming simulation activities available at the Bookstore for students to purchase for ~$17. The textbook "Introduction to Agronomy: Food, Crops, and Environment (2nd Edition)" by Craig C. Sheaffer & Kristine M. Moncada will be used and readings will be made available on Canvas, and a reserve copy is available at C.Y. Thompson Library on East Campus. Additionally, a number of other resources will be made available on the weekly Canvas modules including University of Nebraska Extension NebGuides, Government materials and other University Extension documents.

Assignment due dates
All assignments will be due the day listed on the syllabus and on Canvas. Typically, most quizzes will be due Mondays, with longer assignments are due on Sundays at 11:59pm. Any schedule changes will be noted in Canvas and/or communicated in class. Late quizzes will not be accepted. Late assignments will have 10% of the total points deducted forevery day that they are turned in late. All assignments should be turned via Canvas unless otherwise noted.

Farming simulation "APSIM" activities
Digital tools to support production and sustainability are prevalent in the current agricultural landscape, and very likely to be a part of your future work in the field. We will be working with a farming simulation platform (Agricultural Production Systems sIMulator or "APSIM") to further understand the impact of management decisions on production and environmental outcomes. You will be expected to purchase the manual from the bookstore (purchase for $17) and to download the software to your own laptop computer. The program, unfortunately, does not run on Mac computers, unless you have the Parallels for Mac software (which is available forpurchase from Huskertech at the City Campus Union for ~$40), or if your Mac hard drive is "partitioned" to run windows software. Parallels is available as a download for a free two-week trial which can be utilized during this time; we have tried to structure the activities so that all can completed in a two week period. However, you may find that you will need more than this amount of time to complete the two weeks of in-class activities (weeks 13

& 14) and homework assignments (due at the end of week 14 on Sunday, May 4th). *Please start planning far in advance to make sure that you are able to operate the software on your computer*. Our experience of working with this program in class is that students will not achieve the best results if they do not have the program operating on their own or a borrowed computer. Detailed instructions and in class activities will support your successful download and operating basic functions of the program. We will work through in-class activities in groups during the 13th and 14th weeks of class. We expect that you will have the software functioning on your computer for class during those weeks. After you have completed the installation you should email teaching assistant Blake Hansen (remember to always use the subject line "PLAS 204", see communicating with the teaching team information below). You can also visit with members of the teaching team during their student help hours so that they can note that you have completed this step. If you install software in any time between January and March, you will receive + 2 extra credit points. If you install software in April, you will receive + 1 extra credit point. The culminating assignment for these classes will be to answer a series of questions about the activities submittedon Canvas. Questions for the assignment will also available via the manual.

Scientific article review activity
With the vast information resources available at our fingertips, it is increasingly important to be able to find and utilize credible resources. To help you hone your skills in understanding where agronomic recommendations and information come from, you will have the opportunity to select a peer-reviewed scientific research article related to a topic(s) covered in PLAS 204 of your interest. Part 1 of the assignment will ask you to select the article, describe why you chose the article/topic, and begin reading. Part 2 of the assignment will ask you to record a short presentation (5 minutes) summarizing the article's results so that your peers can understand it. For this part of the activity, you will need to use the YuJa platform, available for free through UNL, to record a screencast video of your article summary.

Agronomy in the news
To further hone skills in speaking and utilizing credible resources, each student will be expected to present a summary of a current news article related to agronomy topics covered in this course. Students will be responsible for one 10-minute presentation based on their selection of a news topic of interest. These will begin in unit 1 and continue through unit 3. More information as well as a presentation template to ensure content is covered thoroughly will be available on Canvas.

Lecture videos and course readings
Each week we will make available ~60-80 minutes of lecture videos that students are expected to watch throughout the week. Additionally, readings will be available via Canvas and are meant to reinforce lecture content and promote student learning outside of the classroom. We will use classroom time to further content by allowing students to participate in active learning activities and discussions.

Technology
We will actively use technology in most lectures throughout the semester. This will include activities such as searching for information in small groups and participating in class-wide through online polls. It is expected that students have either a tablet or laptop with internet

accessibility to complete activities in class. Please speak with me if this is a concern, as there are some laptop computers available through the Department that can be used. Although technology will be used to enhance the learning environment, inappropriate use (i.e. browsing social media during class, responding to emails, sending non-emergency messages) can contribute to a disruptive and distracting learning environment. If technology use becomes a distraction to myself or other students, points will be deducted at the discretion of the teaching team.

Outdoor activities
During class throughout the semester, including during unit one, we will have classes and local field trips outside. This will include visiting field sites located approximately 10–15-minutes walking from Plant Sciences Hall on East Campus, as well as short driving trips to urban farms and field experiments in Lincoln. As we get closer to these dates, we will discuss further expectations and activities. Please come prepared to be outside and with appropriate footwear.

Communicating with the teaching team
The teaching team strives to make itself available to students via student help hours, e-mail and phone. As the lead instructor, I always try to respond to student questions within 24 hours. However, if you are reaching out for help with an assignment that is due very soon (less than 48 hours in advance), we may not have the chance to reply to your request. We also strive to make information about the course available very far in advance so please try to practice the important life skill of starting tasks far in advance! I also ask that students refer to the lead instructors as Dr. or Professor. Please keep in mind that e-mail communication is a professional form of writing. I encourage you to see the Inside Higher Ed article, available online at the below link, for more specific guidance: https://www.insidehighered.com/views/2015/04/16/advice-students-so-they-dont-sound-silly-emails-essay

Additionally, it is requested that when you e-mail or send Canvas messages to the teaching team that you use "PLAS 204" in the subject line in order for us to more promptly reply to questions. Finally, no video or audio taping of class sessions is allowed unless you obtain my permission to do so.

Working farms field trips
In 2025, we will continue embarking on a series of trips to visit working farms and research experiments that are putting into practice the management discussed in class. These will be held on Friday afternoons in February through April, lasting for approximately four to five hours. Students will be expected to attend at least one of three scheduled trips during the semester. Students will also be expected to sign up at least three weeks in advance, with a maximum cap of students who can attend each. Students who are eligible to drive university vehicles and/or passenger vans can earnextra credit for supporting the trips as drivers, and other opportunities for extra credit related to the field trips will be made available. We will provide free transportation to and from campus forthese trips, but students are able to travel on their own if they inform the teaching team in advance of their plans to do so. More information about field trips will be available on Canvas.

Lockdown Browser Requirement for Quizzes and the Final Exam
This course requires the use of LockDown Browser for online quizzes and exams. Watch this video to get a basic understanding of LockDown Browser:

https://www.respondus.com/products/lockdown-browser/student-movie.shtml

Download Instructions
Download and install LockDown Browser from this link:
https://download.respondus.com/lockdown/download.php?id=456252970

Once Installed

- Start LockDown Browser
- Log into to Canvas
- Navigate to the exam

Note: You won't be able to access an exam that requires LockDown Browser with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.

Guidelines
When taking an online exam follow these guidelines:

- Select a location where you won't be interrupted
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
- LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

Getting Help
Several resources are available if you encounter problems with LockDown Browser:

- The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues.
- Respondus has a Knowledge Base available from support.respondus.com. Select "LockDown Browser & Respondus Monitor" as the product to view helpful articles.
- If you're still unable to resolve a technical issue with LockDown Browser, go to support.respondus.com and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it

Course schedule (subject to change)

Unit	Week	Mon Date	Weekly topic(s)	Learning outcomes	Assignments due
1	1	1/20	Course introduction Production trends	-Understand course expectations -Utilize publicly available database to locate crop production information	Syllabus Quiz
	2	1/27	Natural resource management for agricultural production: climate and soil	-Describe the factors responsible for shaping climate on regional and global scales -Describe climate-related factors responsible for crop production decision-making -Describe the processes responsible for soil formation and degradation -Identify soil functions critical for agricultural management	Module 2 Quiz
	3	2/3	Natural resource management for agricultural production: water and sunlight utilization How do we create new knowledge about agriculture? Introduction to peer reviewed scientific articles	-Compare photosynthesis pathways and sunlight utilization strategies -Identify the elements of the water cycle critical for agricultural management	Module 3 Quiz
	4	2/10	Corn and soybean production	-Describe the critical management considerations for corn and soybean production -Compare the use of non-AI and AI approaches to derive crop variety selection	Module 4 Quiz Topic selection for scientific article review
	5	2/17	Wheat management	-Describe the critical management considerations for wheat production and compare to corn and soybean -Compare the use of non-AI and AI approaches to derive crop variety selection	Module 5 Quiz Article review
2	6	2/24	Nutrient management	-Define nutrient requirements for corn, soybean and wheat -Calculate nitrogen requirements for corn in various situations	Module 6 Quiz Tentative field trip date 2/28
	7	3/3	Crop budgeting	-Analyze information from crop budgets to determine the impact of management decisions on profitability	Module 7 Quiz Tentative field trip 3/7
	8	3/10	Integrated pest management and herbicide resistance	-Evaluate principles of integrated pest management -Determine appropriate herbicide choices given resistance scenarios	Module 8 Quiz
		3/17	Spring Break – no classes		
	9	3/24	Site specific crop management	-Summarize how site-specific crop management concepts can be applied to decision-making -Interpret and apply imagery and related site-specific information to decision-making	Module 9 Quiz Crop budget assignment Tentative field trip date 3/28
3	10	3/31	Crop rotations	-Identify the yield, soil and economic benefits as well as impacts of crop rotations	Module 10 Quiz
	11	4/7	Resource conserving cropping systems: perennial grains, agroforestry, and cover crops	-Compare benefits and impacts of resource conserving cropping systems relative to more conventional management	Module 11 Quiz
	12	4/14	Managing for disruptions: Climate change, COVID-19, and more	-Examine management approaches for handling disruptive or uncontrollable events	Module 12 Quiz

	13	4/21	Farm simulations part 1	-Implement the farm simulation platform -Differentiate impacts from varied environments, planting dates and crop rotations	
	14	4/28	Farm simulations part 2	-Implement the farm simulation platform -Differentiate impacts of management on nitrogen related outcomes	Farm simulation assignment
	15	5/5	Final exam review No new lecture content		
	Finals week	Wednesday May 14 7:30am-9:30am			

Support Services and Policy Statements

UNL Course Policies and Resources
Students are responsible for knowing the university policies and resources found on this page https://go.unl.edu/coursepolicies:

- University-wide Attendance Policy
- Academic Honesty Policy
- Services for Students with Disabilities
- Mental Health and Well-Being Resources
- Final Exam Schedule
- Fifteenth Week Policy
- Emergency Procedures
- Diversity & Inclusiveness
- Title IX Policy
- Other Relevant University-Wide Policies

Academic Integrity
Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all members of the academic community. The University's Student Code of Conduct, available here, addresses academic dishonesty. Students who commit acts of academic dishonesty are subject to disciplinary action and are granted due process and the right to appeal any decision. We welcome students working together on *non-quiz or exam* assignments, but *individual work* must always be the final submission.

Policy on Artificial Intelligence
The use of AI tools such as ChatGPT is allowed in this course under some circumstances. Acceptable uses of AI in this course help you learn, understand, and improve your academic skills. This includes:

- Using AI to help brainstorm ideas and organize thoughts.
- Using AI to explain confusing concepts in simple language as a supplementary tool during your study times.
- Using AI to suggest steps to complete your assignment(s) or provide feedback during your assignment completion.
- Maintaining transparency in your use of AI-based tools, including what work is your original contribution in assignments where you have used AI-based tools.

Two parts to this:

- Clearly identify the use of AI-based tools in your work. For example, if you use ChatGPT-3, you must cite "ChatGPT-3. (YYYY, Month DD of query). "Text of your query." Generated using OpenA.I.. https://chat.openai.com/"
- Provide information/context on what part of the work was yours and what you used the AI for.

Unacceptable uses of AI replace your individual effort or original work with AI-generated work or do not include transparency in the usage of AI. This includes:

- Using AI to answer exam or quiz questions.
- Using AI to generate content for assignments.
- Using AI to automate the completion of assignments, whether written, visual, or auditory in nature.
- Using AI to plagiarize content from other sources.
- Using AI without citing AI usage and providing context on what portion of the work is your and what the AI contributed to the product (see last point above on transparency requirements).

In summary, do not use AI to cheat or to automate the completion of assignments. Using AI-generated content without proper citation could result in academic dishonesty charges. If the teaching team suspects your inappropriate use of AI in the course, we will ask students to provide evidence that they have not done so within five days. If proper evidence is not provided (i.e. prior drafts of assignments), students will receive a zero for the assignment.

Diversity & Inclusion
The University of Nebraska-Lincoln does not discriminate on the basis of race, ethnicity, color, national origin, sex (including pregnancy), religion, age, disability, sexual orientation, gender identity, genetic information, veteran status, marital status, and/or political affiliation.

Services for students with disabilities or other special needs
The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD can be located at 232 Canfield Administration Building or at 402-472-3787. Please know that I am constantly working to improve inclusivity and accessibility in my classroom, so if there is something you feel that I can do to better support you, please do not hesitate to reach out to me.

Experiencing difficulties?
I understand that college is a period of transition in life that can be exciting at some times, but also extremely challenging and stressful at other times. If you are experiencing difficulties in this class, please do not hesitate to visit with me to discuss on how you can respond to improve your performance. Below I have included a few additional resources that might be helpful if you are struggling with class or beyond. Remember that *everyone* goes through periods of life when they need to ask for help from others.

Classes*:* If you are experiencing difficulties with more than just my class, you may want to visit with your advisor or take advantage of the CASNR Cares program (402-540-3328). From theCASNR Cares website: "CASNR Cares is the first point of contact for students, faculty, staff and parentswhen there are questions, concerns or situations that affect a student's educational experience at CASNR."

Mental health and well-being: If you feel like you are overwhelmed and/or experiencing general problems with depression, anxiety or other issues, I encourage you to contact the Counseling and Psychological Services office in the Student Health Center to utilize the resources that they have available to students (http://health.unl.edu/counseling-and-psychological-services-caps; (402) 472- 7450). In addition, Big Red Resilience & Well-Being (BRRWB) provides one-on-one well-being coaching to any student who wants to enhance their well-being. Trained well-being coaches help students create and be grateful for positive experiences, practice resilience and self-compassion, and find support as they need it. More information about BRRWB is available at https://resilience.unl.edu/home or 402-472-8770.

Basic needs and security: It can be challenging to do your best in class if you have trouble meeting basic needs like safe shelter, sleep, and nutrition. If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live, I urge you to contact the Husker Pantry (https://pantry.unl.edu/welcome) located at the University Health Center room 123 (550 N. 19th Street) and on East Campus at the Visitors Center, Room 108B, 1625 Arbor Drive. From the Husker Pantry website: "Food and shelter insecurities are an unfortunate reality for students at the University of Nebraska-Lincoln and nationwide. Nearly one in three students on our campus worries about not having enough food until they have money to buy more." They are there to help and can provide food, other

items and resources to students with their NCard.

Childcare and students who are parents*:* To my knowledge, the university does not have a formal policy on children in the classroom. If you are a primary caregiver I understand that unforeseen disruptions to childcare might occur and require you to bring children to class. While this is not meant to be a long-term childcare solution, occasionally bringing a child to class in order to cover gaps in care is perfectly acceptable. I ask that all other students work with me to create a welcoming environment that is respectful of your colleagues who are also parents. In all cases where children come to class, I may ask that you sit close to the door so that if your child needs special attention and is disrupting learning for other students, you may step outside until their need has been met. While I maintain the same high expectations for all students in my classes regardless of parenting status, I am happy to problem-solve with you in a way that makes you feel supported as you strive for school-parenting balance. You may find support and connection via the Students with Children RSO (https://womens-center.unl.edu/student-parents).

Emergency responses
Fire Alarm (or other evacuation): In the event of a fire alarm: Gather belongings (Purse, keys, cellphone, N-Card, etc.) and use the nearest exit to leave the building. Do not use the elevators. After exiting notify emergency personnel of the location of persons unable to exit the building. Do not return to building unless told to do so by emergency personnel.

Tornado Warning: When sirens sound, move to the lowest interior area of building or designated shelter. Stay away from windows and stay near an inside wall when possible.

Active Shooter

- **Evacuate**: if there is a safe escape path, leave belongings behind, keep hands visible and follow police officer instructions.
- **Hide out**: If evacuation is impossible secure yourself in your space by turning out lights, closing blinds and barricading doors if possible.
- **Take action**: As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter.

UNL Alert:
Notifications about serious incidents on campus are sent via text message, email, unl.edu website, and social media. For more information go to: http://unlalert.unl.edu. Additional Emergency Procedures can be found here: http://emergency.unl.edu/doc/Emergency_Procedures_Quicklist.pdf