

Agronomy 204
Resource Efficient Crop Management
Spring 2021
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Instructors

Dr. Andrea Basche
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Dr. Salvador Ramirez II
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Student help hours: Monday and Wednesday 12:15-12:45pm, Gooding Center; online Fridays 1:30-2:30pm (zoom information on Canvas) *or by appointment*

Couse schedule

Lecture: Online Canvas Modules & Videos

Recitation Section 1: Monday 9:00am-10:20am; Gooding Center, Plant Sciences

Recitation Section 2: Monday 1:00pm-2:20pm; Gooding Center, Plant Sciences

Recitation Section 3: Tuesday 1:00pm-2:20pm; Gooding Center, Plant Sciences

Recitation Section 4: Wednesday 9:00am-10:20am; Gooding Center, Plant Sciences

Recitation Section 5: Wednesday 1:00pm-2:20pm; Gooding Center, Plant Sciences

Teaching Assistants

Reegan Salverson
rsalverson7@huskers.unl.edu

Student help hours: online or by appointment
Tuesdays 2:30-3:30pm

Lily Woitaszewski
lily.woitaszewski@huskers.unl.edu

Student help hours: online or by appointment

Steven Mizero
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Student help hours: online or by appointment

Any updates to regular student help hours will be noted on Canvas and in class

About the course

The landscape of agriculture is constantly changing. In 2021, 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

Due to the ongoing COVID-19 pandemic, Agronomy 204 will be offered in a different format relative to other semesters. All lecture content will be available as recorded videos and made available to students at least one week in advance of the respective topics. Synchronous, in-person recitation (five total) sections will be held during the week and will include individual and group activities. Dr. Basche will primarily lead the Monday and Tuesday recitations, and Dr. Ramirez will primarily lead the Wednesday recitations.

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
- Differentiate between management factors in various cropping systems and evaluate the tradeoffs associated with agronomic and environmental outcomes
- Synthesize information from scientific articles to understand the steps in the scientific process and 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, VidGrid, 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 29	35
Weekly quizzes	Due Fridays by 11:59pm 13 weeks, 20 points each, lowest score dropped	240
Nebraska’s natural resources: Morrill Hall activity	Friday, February 12	50
Scientific article review	Topic Selection: Friday, February 19 Video Summary: Friday, February 26	100
Farming simulation assignment	Friday, March 26	75
Crop budget assignment	Friday, April 23	100
Final Exam	Finals week	100
Total		700

*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 adjustments for our current reality

The Spring 2021 semester will be different than others we have experienced. I recognize that we are all under very different and unique circumstances due to the ongoing global pandemic. The most important ask I have for 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 feeling sick, quarantining or struggling in any other way. *We are here to help everyone succeed in the course!* We plan to make recitation sessions available by Zoom as needed for students. Additionally, the overall course points have been reduced relative to prior semesters, we will cancel recitation meetings during week nine to provide for extra help as needed and/or time off, and you will have the opportunity to drop the lowest quiz score during the semester. As a teaching team we strive to be as accommodating as possible but need you to communicate your needs and challenges with us.

Course engagement

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 ample opportunity to do so through in-class activities and discussions. While attendance points are not assigned in this course, in my experience thus far teaching the course, students with greater attendance tended 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.

In our first recitation sessions during weeks 1 & 2, we received more than fifty responses to a poll asking students in the course to describe their expectations of each other. Some of the most commonly repeated phrases and ideas included: *Active participation, showing respect toward one another, being on time, and helping each other through supportive teamwork.* We have included below some representative responses from the poll that we hope can remind all of us of our expectations for each other in the course.

- “I expect to learn from them via respectful and open minded interactions”
- “Teamwork and respect for others' opinions”
- “Contributing in conversations around class to gain a different perspective from other students”
- “Help pull each other up when there are questions rather than putting each other down”

- “Students show up on time and actively participate in class”

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 in advance. The questions will primarily focus on the recitation section activities, therefore your engagement in those sessions is critical to success on the final exam. Notes cannot be used for the final exam. Unless there is an illness or unforeseen situation, the exam *cannot* be rescheduled. In general, please reach out to me far in advance about any conflicts that you may have with any quizzes, exams, assignments or class attendance in general.

Quizzes

There will be a weekly timed quiz administered on Canvas covering the material in the lecture videos. These will always be due on Fridays at 11:59pm and will have a set time limit of 30 minutes. We will have thirteen throughout the semester (20 points each) with the lowest quiz score dropped. You are expected to work independently on the quizzes. If we discover academic integrity concerns such as copying work from other students, 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 is a manual for the farming simulation activities available at the Bookstore that is strongly recommended for students to purchase for \$9a (a pdf copy will also be made available on Canvas). 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 that is listed on the syllabus and on Canvas. All assignments are due on Fridays at 11:59pm. Any schedule changes will be noted in Canvas and/or communicated in class. Late assignments will have 10% of the total points deducted for every 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 \$9) 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 for purchase 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 and we have tried to structure the activities so that all can be 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 7 & 8) and homework assignments (due week 9 on Friday, 3/26). *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 computers. 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 7th and 8th weeks of class. We expect that you will have the software functioning on your computer for class during those weeks. Teaching Assistant Reegan Salverson should be the primary person to help with installation and her student help hours will be on Zoom. After you have completed the installation you should email Reegan (remember to always use the subject line “Agro 204”, see communicating with the teaching team information below) or visit her during her student help hours so that she can note that you have completed this step. If you install software in January or February you will receive + 2 extra credit points. If you install software in March you will receive + 1 extra credit point. The culminating assignment for these classes will be to answer a series of questions about the activities submitted on Canvas. Questions for the assignment are also available via the manual. We plan cancel the scheduled recitation meetings in week 9 but will be available in the classroom at those times to help students navigate the assignment if needed.

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 Agro 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 VidGrid platform, available for free through UNL, to record a screencast video of your article summary.

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. In Agro 204, we use classroom time to further content by allowing students to participate in active learning activities and discussions. You should expect to see questions on quizzes and exams that are included in videos, recitations and reading material.

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 Facebook 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 during weeks 10-13 (weather permitting), we will have class outside to conduct our own experiments with the field trials, located approximately a 10-15 minute walk from Plant Sciences Hall on East Campus. As we get closer to these dates, we will discuss further expectations and activities. Please come prepared to be outside and with appropriate footwear.

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.

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 with the teaching team that you use "Agro 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.

Course schedule (subject to change)

Unit	Week	Date	Weekly topic(s)	Learning outcomes	Recitation activity	Assignments due
1	1	1/25	Course introduction Production trends	-Understand course expectations -Utilize publicly available database to locate crop production information	Course expectations and finding crop production data	Syllabus quiz Quiz 1
	2	2/1	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	Calculating rates of soil formation and degradation	Quiz 2
	3	2/8	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	Comparing resource efficiencies in different environments	Quiz 3 Morrill Hall activity
	4	2/15	Corn and soybean production	-Describe the critical management considerations for corn and soybean production	Reviewing key management considerations for corn and soybean, Writing activity	Topic selection for scientific article review Quiz 4
	5	2/22	Wheat management	-Describe the critical management considerations for wheat production and compare to corn and soybean	Understanding the value of peer review and how to find scientific articles	Article review Quiz 5
2	6	3/1	Nutrient management	-Define nutrient requirements for corn, soybean and wheat -Calculate nitrogen requirements for corn in various situations	Calculating nitrogen requirements for corn	Quiz 6
	7	3/8	Farm simulations part 1	-Implement the farm simulation platform -Differentiate impacts from varied environments, planting dates and crop rotations	Utilizing a farm simulation platform part 1: planting dates and crop rotations	Quiz 7
	8	3/15	Farm simulations part 2 Crop budgeting	-Implement the farm simulation platform -Differentiate impacts of management on nitrogen related outcomes	Utilizing a farm simulation platform part 2: nitrogen application and economically optimal nitrogen rates	Quiz 8

				-Analyze information from crop budgets to determine the impact of management decisions on profitability		
	9	3/22	No new lecture content		No recitation meetings*	Farm simulation assignment
3	10	3/29	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	Interpreting and applying imagery and related site specific information to decision-making	Quiz 9
	11	4/5	Integrated pest management and herbicide resistance	-Evaluate principles of integrated pest management -Determine appropriate herbicide choices given resistance scenarios	Identifying, measuring and evaluating common weeds in Nebraska	Quiz 10
	12	4/12	Crop rotations	-Identify the yield, soil and economic benefits as well as impacts of crop rotations	Exploring winter wheat in a crop rotation field experiment	Quiz 11
	13	4/19	Managing for disruptions: Climate change, COVID-19, and more	-Examine management approaches for handling disruptive or uncontrollable events	Interactive Kahoot competition on climate change impacts	Crop budget assignment Quiz 12
	14	4/26	Resource conserving cropping systems: perennial grains, agroforestry, and cover crops	-Compare benefits and impacts of resource conserving cropping systems relative to more conventional management	Final exam review	Quiz 13
	15	5/3	Finals week Recitation 1 Mondays 9am: Monday May 3, 10am-12pm Recitation 2 Mondays 1pm: Thursday May 6, 1pm-3pm Recitation 3 Tuesdays 1pm: Monday May 3, 1pm-3pm Recitation 4 Wednesdays 9am: Monday May 3, 10am-12pm Recitation 5 Wednesdays 1pm: Thursday May 6, 1pm-3pm			

*No recitation meeting, teaching team available for extra help

Support Services and Policy Statements

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.

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 make an appointment with Megan Schaefer, Student Development Coordinator, (megan.schaefer@unl.edu; (402) 472-7812) in 103 Ag Hall. From the CASNR Cares website: "CASNR Cares is the first point of contact for students, faculty, staff and parents when 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). 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>).

Face covering policy: To protect the health and well-being of the University and wider community, UNL has implemented a policy requiring all people, including students, faculty, and staff, to wear a face covering that covers the mouth and nose while on campus. The classroom is a community, and as a community, we seek to maintain the health and safety of all members by wearing face coverings when in the classroom. Failure to comply with this policy is interpreted as a disruption of the classroom and may be a violation of UNL’s Student Code of Conduct. Individuals who have health or medical reasons for not wearing face coverings should work with the Office of Services for Students with Disabilities (for students) or the Office of Faculty/Staff Disability Services (for faculty and staff) to establish accommodations to address the health concern. Students who prefer not to wear a face covering should work with their advisor to arrange a fully online course schedule that does not require their presence on campus.

Students in the classroom: 1. If a student is not properly wearing a face covering, the instructor will remind the student of the policy and ask them to comply with it. 2. If the student will not comply with the face covering policy, the instructor will ask the student to leave the classroom, and the student may only return when they are properly wearing a face covering. 3. If the student refuses to properly wear a face covering or leave the classroom, the instructor will dismiss the class and will report the student to Student Conduct & Community Standards for misconduct, where the student will be subject to disciplinary action.

Instructors in the classroom: 1. If an instructor is not properly wearing a face covering, students will remind the instructor of the policy and ask them to comply with it. 2. If an instructor will not properly wear a face covering, students may leave the classroom and should report the misconduct to the department chair or via the TIPS system for disciplinary action through faculty governance processes.

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