

# **AGRO 4605: Strategies for Agricultural Production and Management**

## **Syllabus**



**Overview:** Some of the greatest challenges facing humankind are related to agriculture. The human population continues to grow and food, fuel, and fiber production are critical to improving human lives around the world. In this course you will learn the principles of crop production and apply those principles to address real-world agricultural challenges using quantitative tools and skills. You will learn how to find, access, and use publicly available data to better make decisions in agriculture. You will learn to synthesize information from peer-reviewed research and apply that information to practical problems. You will practice collecting your own data, organizing it, and analyzing it to test hypotheses and solve problems. Discussions and labs will be interactive and will require individual and group-level critical thinking.

### **Student learning outcomes:**

1. Learn advanced principles of plant ecology.
2. Identify gaps in knowledge when assessing agricultural challenges.
3. Translate and apply principles of plant ecology to address agricultural challenges.
4. Learn to fill knowledge gaps by accessing data from large, publicly available datasets.
5. Learn to manage and analyze data collected from studies and from databases using the program R.
6. Practice conducting experiments and collecting data for analysis and interpretation.
7. Analyze the social, economic, and environmental outcomes of agricultural scenarios.
8. Apply critical thinking and quantitative reasoning skills in a group setting.

### **Official course meeting times:**

Lectures - Tuesdays and Thursdays from 11:45 am to 12:35 pm; 316 McNeal Hall

Discussion - Thursdays from 12:50 pm to 1:40 pm; 316 McNeal Hall

**Modality:** This class will be taught using a hybrid modality. We will meet in-person in 316 McNeal Hall for one of the lecture periods (on Thursdays, see below for details) and for the discussion session immediately after the lecture on Thursdays. The Tuesday lecture period will be reserved for you to watch pre-recorded lecture videos. The exception to this is on the first day of classes where *we will meet in-person in 316 McNeal Hall on Tuesday, Sept. 6, 2022.*

**Lectures:** Tuesdays (11:45-12:35) - Asynchronous. Pre-recorded lectures and associated materials will be made available for viewing during this session. For most weeks, we will not be meeting virtually or in-person during this time. Please see the [course schedule](#) for details.

**Discussion:** Thursdays (11:45-1:40) - The lecture and discussion sessions will be conducted as one continuous session with a 10 minute break halfway through. These sessions will be held in-person in 316 [McNeal Hall](#). Although there is no formal lab for this class, we will use this session to go to the field to collect data, have working sessions to process and analyze data, and to discuss readings and assignments.

**Instructor:** Professor Jake Jungers (pronounced Youngers), [junge037@umn.edu](mailto:junge037@umn.edu), [409 Hayes Hall](#)

**Office Hours:** Contact by email to set up an appointment: [jung037@umn.edu](mailto:jung037@umn.edu)

**Prerequisites:** AGRO 1101 (Biology of Plant Food Systems) or AGRO 1103 (Crops, Environment, and Society) or equivalent

**Course logistics:**

The course will include one lecture period per week to provide background information related to the weekly discussion or lab activity on Thursdays. The lecture will be posted as a set of videos on Canvas that you can watch anytime. The Thursday session will be used for a variety of class activities including data collection in the field, data analysis in the lab, and numerous discussion-based activities. The course will cover a broad range of topics related to the economic, environmental and social dimensions of agriculture. Skills you can expect to build include searching for information in peer-reviewed literature, managing and analyzing datasets, and applying web-based tools to access large national and international databases that host a wealth of information useful for improving farm operations.

This class will be taught in a hybrid form of virtual and in-person sessions. Except for specific occasions (including the first day of class), *we will not be meeting on Tuesdays.* We will *meet*

*in-person on Thursdays* in 316 McNeal for interactive and engaging sessions. As a class, we will work to foster a comfortable, welcoming environment for discussion and interaction.

Some Thursdays will be focused on practicing our quantitative skills including searching the peer-reviewed literature for specific information, accessing databases, finding and downloading climate data, and wrangling data using R. ***A laptop is required for in-person sessions.*** Please contact me if you need access to a laptop. A detailed schedule of these activities can be found [here](#).

The course will rely heavily on Canvas. You will find weekly modules that consist of required lectures, videos, readings, activities, assignments, and quizzes. Each week will be accessible beginning at 8:00 am on Monday morning. You will be required to complete that week's content by the following Sunday at 9:00 pm.

**Communication:** Please direct all questions, concerns, and requests to Professor Jungers. Please communicate ***by email and include the course number in the subject line of the message.*** I will try to respond within 24 hours, but please do not expect replies from instructors outside of normal working hours (8 am to 6 pm). Please be sure that your message is clear and relatively formal; please don't write to us as if we're communicating on Twitter! See [this article](#) for more information on effective communication with instructors.

**Make-up sessions for excused absences:** Peer-to-peer interaction is a critical component of your college experience. Although we have learned to facilitate classroom interaction through virtual formats, these virtual interactions do not replace the experience of in-person interactions and engagement. The Thursday discussion classes are designed to offer in-person interactions and this class provides points to students who participate in those sessions. However, you should not come to class if you are feeling ill or if you have tested positive for COVID-19. Make-up sessions will be available for [legitimate absences](#). If possible, contact the instructor as soon as you know you will have a legitimate excuse for your absence. Make-up sessions can be scheduled with the instructor.

**Make-up exams:** Everyone is expected to take the final exam on the scheduled exam date. If you are unable to take an exam because of a [legitimate absence](#), you must provide written verification one week prior to the absence and make arrangements for a make-up of the exam to be taken within one week of the exam date. A grade of zero (0) will be recorded for "no shows" on exams and make-up exams. Make-up exams will have different but equal content as the original exam.

**Late assignment submissions:** The due dates for all assignments are available to you at the start of the semester. Therefore, you will have all the information you need to properly plan ahead to ensure that your assignments are submitted on time. If you experience a [legitimate absence](#) as defined by the University of Minnesota Policy, the deadline may be adjusted. If you are unable to

complete an assignment because of a legitimate absence, you should contact the instructors in advance of the due date to make arrangements.

If you happen to submit an assignment late, 10% of the total points will be deducted for each day that the assignment is late.

**Incompletes:** All assignments must be completed to meet the requirements for this course. Incomplete assignments not completed by the end of the semester will receive a grade of zero (0). This includes all quizzes, labs, and the exam.

**Extra work to benefit individual students:** There is no option for students to submit “extra” work in an attempt to raise their grade. Mid-term alerts will be provided for students who, on the basis of performance in the course through the sixth week of the semester, appear to be in danger of receiving a grade of D, F, or N. We will continually post grades on Canvas throughout the semester; students are encouraged to continually monitor their progress.

**How to succeed in this class:**

**Lectures** – Lectures will be divided into multiple short (~10 minute) videos. Slides will be made available for all lectures. Material presented in lectures is essential for successful completion of the discussion activities. Your understanding of the material from the lectures will be evaluated during the final exam.

**Discussions** – Discussions will be led by both students and the instructor. Discussions will be based on the previous lecture and readings. The discussion leader(s) will write and distribute questions related to the lectures and readings prior to the discussion session to facilitate engagement. Everyone benefits when there is equal and balanced participation by all students, so you may be called on to share thoughts on discussion topics.

**Labs** – The intent of the labs is to develop the ability to acquire and interpret data. You will learn to use new tools and have ample opportunity to practice using those tools during the lab sessions. Data tools include web-based data management tools for sharing (e.g. Google Sheets), Microsoft Excel, and the statistics program R. Using these tools, you will practice manipulating, analyzing, and interpreting data. These skills are essential for helping you make data-driven decisions to address agricultural issues. Students will need to bring a laptop computer to every Thursday lab session.

**Course materials:** There is no textbook for this course. You will need a computer and a reliable internet connection for watching recorded lecture videos. All reading materials and assignments will be distributed via Canvas. Please bring a laptop to class on Thursdays for in-person meetings.

**Expected workload:** For this 3-credit course, it is expected that students spend a minimum of 9 hours per week completing coursework, 3 of which will be instructional time (note: according to University policy, “one hour” equates to 50 minutes of time). This requirement is fulfilled through weekly modules that include recorded video lectures and other instructional videos, required readings, discussion forum questions, quizzes, and other activities. UMN defines one undergraduate credit as equivalent to 42-45 hours of learning effort distributed across a semester (including all classroom and outside activities). Please review the UMN Policy on Expected Student Academic Work per Credit.

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**Grading:** The total points for this course is 300, and grades are based on the following: *Discussion Quizzes (27%), Lab Assignments (27%), Exam (17%), Hypothetical farm report and presentation (17%), and attendance (2%)*. See below for more details.

Letter grades for the course will be assigned as indicated in the following table. The score assigned to each grade is the minimum necessary score to achieve the grade.

Score	Grade
94	A
90	A-
87	B+
84	B
80	B-
77	C+
74	C
70	C-
67	D
60	D-

**Assignments:**

*Discussion Quizzes (27%)* - You will be asked to respond to questions related to discussion videos and articles. Articles will include peer-reviewed papers and popular news articles. There are 9 discussion quizzes and each is worth 10 points (except for quiz 5, which is worth 15 points).

*Exam (17%)* - There will be one cumulative exam at the end of the semester. The exam will primarily test on materials presented in lecture videos, but some questions also require you to demonstrate tools learned in labs and discussions.

*Lab Activities (27%)* - There will be 4 lab activity assignments. Labs 1 and 2 are worth 20 points each and labs 3 and 4 are worth 30 points each.

*Presentation (8.5%)* - You will have to deliver a seven-minute presentation summarizing the results of the hypothetical farm activity.

*Hypothetical Farm Report (8.5%)* - You will have to submit a written report summarizing results from your hypothetical farm project.

*Attendance (2%)* - If you attend at least 12 class sessions, including the hypothetical farm presentations, you will receive 5 points for the semester.

**Appropriate Student Use of Class Notes and Course Materials:** Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see:  
<http://policy.umn.edu/education/studentresp>.

**Mental Health and Stress Management:** 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 and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus at The Boynton Health Center is available to provide help.  
<http://www.bhs.umn.edu/health-information/index.htm>;  
<http://www.bhs.umn.edu/east-bank-clinic/mental-health-services.htm>

**University Policies:** The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and

intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

- ***Student Conduct:***

As a student at the University you are expected to adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see:

[http://www1.umn.edu/regents/policies/academic/Student\\_Conduct\\_Code.html](http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html)

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

- ***Plagiarism/Scholastic dishonesty:***

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. [http://www1.umn.edu/regents/policies/academic/Student\\_Conduct\\_Code.html](http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html)

If it is determined that a student has cheated, he or she may be given an "F" or an "N" on the assignment or for the course, and may face additional sanctions from the University. Please be aware that all instances of academic dishonesty will be reported to the Office of Community Standards. For additional information, please see:

<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>

The Office of Community Standards has compiled a list of Frequently Asked Questions regarding scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>

If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

- ***Sexual Harassment:***

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information,

please consult Board of Regents Policy:

<http://www1.umn.edu/regents/policies/humanresources/SexHarassment.html>

- ***Disabilities:***

The University is committed to providing quality education to all students regardless of ability. Determining appropriate disability accommodations is a collaborative process. You as a student must register with Disability Services and provide documentation of your disability. The course instructor must provide information regarding a course's content, methods, and essential components. The combination of this information will be used by Disability Services to determine appropriate accommodations for a particular student in a particular course. For more information, please reference Disability Services: <http://ds.umn.edu/student-services.html>

- ***Diversity:***

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: [http://www1.umn.edu/regents/policies/administrative/Equity\\_Diversity\\_EO\\_AA.html](http://www1.umn.edu/regents/policies/administrative/Equity_Diversity_EO_AA.html)