

# **PAG 115L Introduction to Precision Agriculture Lab Precision Ag. Program**

## **Course Information:**

Course Prefix: PAG

Catalog Number: 115L

Course Credits: 1

Time and Place: Thursday 2-3:40 PM

Location: LADD 201 and Field Trip

## **Instructor:**

Dr. Xin (Rex) Sun

Email: [xin.sun@ndsu.edu](mailto:xin.sun@ndsu.edu)

Phone Number: 701-231-5756

Office: LADD 101H

Office Hours: Monday 11:00 AM – 12 PM, LADD 101H

## **Bulletin Description:**

This laboratory course is designed to teach students Precision Ag hands on experiences include drone flying, precision ag mapping, field visit and ag robotic demonstration.

## **Course Co-requisites:**

- PAG 115 Introduction to Precision Agriculture

## **Course Objectives:**

1. Students will be able to practice the application of precision agriculture topics which include drone applications in agriculture and image process, data acquisition applications in the farm field.
2. Students will be able to understand and practice precision ag mapping software function concepts.
3. Students will be able to practice team cooperation skills during the fieldwork/project assignments.

## **Pedagogical Style:**

- This is primarily a laboratory class, instructors will demonstrate the equipment, sensors, drones use instructions on farm site (NDSU Casselton agronomy seed farm).
- Students should feel free to ask questions at any time during lectures.
- This classroom is a place where you will be treated with respect and individuals of all ages, backgrounds, national origins, religious affiliations, sexual orientations, abilities, and other visible and nonvisible differences are welcome. All members of this class are expected to contribute to a welcoming and inclusive environment for every other member of the class.

**Textbook:** Instructor notes

**Outcomes:**

Students will better understand the application side in precision agriculture. They will learn hands on experience in precision agriculture which include drone applications, image processing and weather stations.

**Syllabi on Web Pages:**

The course syllabus, class topic presentations will be available at Blackboard.

**Evaluation Procedures and Grading Criteria**

**Assignment Policy:**

The due dates for the lab assignment will be given after each lab. Late assignments will be accepted with a 10% deduction of total assignment points per NDSU class day. All assignments must be submitted before 5 p.m. on the due date. Late assignments will not be accepted after solutions are posted/handed out/discussed or after 2 NDSU class days from the date they are due.

You are encouraged to work together with others for your lab assignments because that will help you learn. You are also encouraged to see the instructor for assistance during office hour times or any other time as long as I am in my office. Although students are encouraged to work together and assist one another with lab assignments, all work submitted should be created by that individual. If it is apparent that work has simply been copied from other's work, all students involved will receive 0 points for that assignment (except group project report).

**Grading Policy:**

The possible points that can be earned for all work categories are listed in the table below.

Work category	Possible Points
Lab Assignments (10 points per Lab)	150
Total	150

Each student's final letter grade will be determined by the percentage of the total earned points over the total possible points using the following grading scale:

Grading Scale	Grade Percentage of Total Points for the Course
A	90% and above
B	80% through < 90%
C	70% through < 80%
D	60% through < 70%
F	Less than 60%

### **Attendance and Late Assignments:**

Attendance in classes is expected and important. (The term “class” includes class, online class, laboratory, field trips, group exercises, or other activities.) However, there are instances in which students are unable to attend class and in which those absences will be excused. These instances are described in policy 333 (<https://www.ndsu.edu/fileadmin/policy/333.pdf>). Absences not covered by this policy are excusable at the discretion of the instructor. However, class policies regarding class absence are provided below. (Note: NDSU Student Health Service does not provide students with excuses for class absences or tardiness due to illness or injury.)

If you will be missing class for a university club or team event or other excusable reason to be determined by the instructor, you must let the instructor know *before* you miss class. Consideration will be given to those students who have a *valid emergency* (severe illness or a death in the family) as their reason for a late assignment.

“Other excusable reason to be determined by the instructor or presented in policy 333, you must let the instructor known in advance.” The course instructor must clearly inform students on the first day of class and in writing in the syllabus of their (1) policy regarding class absence and (2) policy, if any, for making up missed assignments. If class attendance is a component of the course grade, the course instructor must clearly communicate this to the class in writing in the syllabus. See NDSU Policy 333 for faculty and student responsibilities related to attendance, including for university-sponsored activities.

### **Additional Resources for Students**

- As a member of the NDSU community, resources are available for you should you need help in dealing with adverse reactions to things happening in the world today. A variety of resources are listed below:

For students on campus and remotely (telehealth):

Counseling Services: 701-231-7671; <https://www.ndsu.edu/counseling/>

Disability Services: 701-231-8463; <https://www.ndsu.edu/disabilityservices/>

Student Health Service: 701-231-7331; <https://www.ndsu.edu/studenthealthservice/>

Dean of Students Office: 701-231-7701; <https://www.ndsu.edu/deanofstudents/>

In a crisis or emergency situation:

Call University Police: 701-231-8998

Call 9-1-1

Go to a Hospital Emergency Room

Go to Prairie St. Johns for a Needs Assessment: 701-476-7216 (510 4th St. S.)

Call the FirstLink Help Line: 1-800-273- TALK (8255) or 2-1-1

Call Rape and Abuse Crisis Center: 701-293-7273

### **Tentative Course Topics and Schedule\*:**

Schedule is Weather and Lecturer Dependent (Subject to change)	
Week	Topics
1	Fundamentals of GIS
2	A Broad Look at North Dakota Agriculture using GIS
3	UAS flight planning and data collection
4	UAS pilot certificant and PART 107 Exam introduction
5	Precision Ag Equipment: data loggers, yield monitors, VR controllers, cameras, etc.
6	Precision Ag Equipment: data loggers, yield monitors, VR controllers, cameras, etc.
7	Imagery collection and processing
8	Imagery collection and processing
9	Lab Tour
10	Robot and sensors
11	Field Tour
12	Field Tour
13	Soil and Yield
14	AI in Precision ag
15	Group discussion

\*Except for examination dates, the above course schedule is subject to change

### **Americans with Disabilities Act for Students with Special Needs:**

Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office ([www.ndsu.edu/disabilityservices](http://www.ndsu.edu/disabilityservices)) as soon as possible. Assistance is also available from Disability Services in lower level of main library, suite 17 (231-8463). <http://www.ndsu.edu/disabilityservices/>

### **Veterans and Military Personnel:**

Veterans or military personnel with special circumstances or who are activated are encouraged to notify the instructor as early as possible.

### **Academic Honesty:**

All students taking any course in the College of Agriculture, Food Systems, and Natural Resources are under the Honor System (<http://www.ag.ndsu.edu/academics/honor-system-1>). The Honor System is a system that is governed by the students and operates on the premise that most students are honest and work best when their honesty, and the honesty of others, is not in question. It functions to prevent cheating as well as penalize those who are dishonest. It is the responsibility of the students to report any violations of the honor pledge to the instructor, honor commission or

the Dean of the College of Agriculture, Food Systems, and Natural Resources. The academic community is operated on the basis of honesty, integrity, and fair play.

*NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at [www.ndsu.edu/academichonesty](http://www.ndsu.edu/academichonesty).*

**Use of Cell Phones, iPods, MP3 Players, and Other Electronic Devices:**

All participants in this class are subject to NDSU University Senate Policy 158: Acceptable use of Electronic Communications Devices (<http://www.ndsu.edu/fileadmin/policy/158.pdf>).

As a courtesy to other students and the instructor, all cell phones, iPods, MP3 players, and other electronic devices except handheld calculators should be turned off or placed in a vibrate-only mode during class time. Initiating phone calls, text message, or other types of messages during class time -including those to friends, family, classmates, coworkers, or supervisors—is unacceptable unless there is a genuine emergency. Examples of emergencies include weather-related school closing announcements; fire, bomb, or other threats to public safety and well-being; and other incidents in which the NDSU system is or could be activated to provide broadcast messages to the NDSU community.

Use of cell phones or other portable electronic devices for communication, transmission, retrieval, or storage of information during the administration of a test or quiz may be considered an incident of **academic dishonesty**. One exception to this policy is the use of handheld calculators for computational purposes. Use of cell phones or similar devices as a calculator during tests and quizzes will not be allowed because it is difficult to distinguish such activity from sending and receiving text messages, which could obviously be interpreted as a form of academic dishonesty.

**Dead Week Policy:**

The NDSU Dead Week policy is available at <http://www.ndsu.edu/registrar/dates/deadweek/>.