

## PAG 215 – Mapping of Precision Ag Data

### Basic Information

**Course prefix, catalog number, and title:** PAG, 215, Mapping of Precision Ag Data

**Number of credits:** 3

**Term and year:** Fall/2024

**Time and place:** Lecture: Tuesday and Thursday 09:30 am – 10:20 am; Location: Ladd Hall Rm 209

Lab: Thursday 2:00 pm – 4:00 pm; Location: TBD, QBB Rm 132

**Instructor's name:** Dr. Paulo Flores

**Office location:** 104L Ladd Hall

**Office hours:** Monday, 1:00 – 2:00 pm, Tuesday, 10:30 am – 11:30 am. Students can also meet the instructor by appointment. Drop-ins are acceptable at other times but instructor's availability cannot always be guaranteed. Students are also welcome to call office number or Zoom, request a Zoom meeting, or send questions via e-mail.

**Phone Number:** 701.231.5348

**Email Address:** [paulo.flores@ndsu.edu](mailto:paulo.flores@ndsu.edu)

**Zoom PMI :** 573.779.7527

### Communication

- The primary method by which course-related information will be communicated is during class. Reminders, notification of any schedule or assignment changes will be communicated through NDSU email and posted on Blackboard announcements page.
- Your NDSU email address is the official route for information.
- The class will be face-to-face. Zoom will be used mainly for recording purposes. When virtual participation in this course is needed (decided by the instructor on case-by-case basis), it will require both video and audio capabilities.

### Technology Concerns

For any technology concern, please contact the IT Help Desk.

Email: [ndsu.helpdesk@ndsu.edu](mailto:ndsu.helpdesk@ndsu.edu)

Call: 701-231-8685 (option 1)

### Bulletin Description

The course is designed to introduce students to currently technologies and software solutions being used for data collection, storage, and analyzes to support more informed crop management decisions. The course is offered as two 50-minute lectures and one 2-hour lab per week.

### Prerequisites

PAG 115 – Introduction to Precision Agriculture

### Recommended Student Resources

- D. Kent Shannon, David E. Clay, Newell R. Kitchen. *Precision Agriculture Basics*. American Society of Agronomy, Incorporated, 2018. ISBN: 978-1-4200-9270-7. (Recommended)
- David E. Clay and John F. Shanahan (Editors). *GIS applications in precision agriculture - Volume Two*. CRC Press, 2011. ISBN: 978-1-4200-9270-7. (Recommended)

### Course Objectives

*Objectives*

# PAG 215 – MAPPING OF PRECISION AG DATA

## FALL 2024

The course objectives are 1) to introduce students to tools/software, hardware, and techniques that are used to collect data during planting activities, crop growing season, and harvest to make more informed crop management decisions using precision agriculture principles; 2) introduce students to the main platforms and software used to store and manipulate precision ag related data.

### Outcomes

Students will:

- Describe the main sources of data in precision agriculture.
- Retrieve, create visualization, and analyze information collected by agricultural machinery.
- Become familiar with the main cloud platform and software used to store and analyze data collected by agricultural machinery.

### Modes of Presentation

Lecture with PowerPoint – classroom and Zoom (recording purposes)

Guest Speakers

Problem solving/demonstrations

### Blackboard

Blackboard will be used for announcements, class presentations, and for posting grades (information purposes only).

### A Notice About Copyright of Course Materials

Refer to NDSU [Policy 190](#) on Intellectual property.

- In this course recording the lectures with your own personal devices is prohibited without prior approval from the instructor.
- In this course recording the lectures for anything other than personal use is prohibited.

### Evaluation Procedures and Grading Criteria

Students will have 5 categories in which they will be evaluated in the course. Those categories are as follows.

<b>Category</b>	<b>---- % of the final grade ----</b>
1. Homework (up to 12)	15
2. Quizzes (unannounced, up to 6 quizzes)	15
3. Labs (projects)	20
4. Exam 1	20
6. Final exam (comprehensive)	30
Total	100

\*Letter grades will be assigned using the following scale: A=  $\geq 90$  - 100%; B=  $\geq 80$  -  $< 90\%$ , C=  $\geq 70$  -  $< 80\%$ ; D=  $\geq 60$ - $< 70\%$ , and F=  $< 60\%$ .

Homework, quizzes, labs, and test scores will be posted on Blackboard for informational purposes only.

Quizzes can be unannounced and will be no makeup for missed quizzes.

## PAG 215 – MAPPING OF PRECISION AG DATA

### FALL 2024

Due dates for homework and lab reports will be provided with the assignments, and they will be due at 4:30 pm on the day of submission. Late assignments will be accepted with a 10% penalty per NDSU class day, but they will not be accepted after solutions are posted/handed out/discussed. The instructor will provide flexibility for those students affected by illness or other challenges on a case-by-case basis at his own discretion.

Students are encouraged to work in virtual groups to complete their homework and lab assignments, which allow for students to learn from each other. Although working groups are encouraged, students are required to turn in individual versions of their assignments. In the case when homework, lab reports, or missed homework and lab report seem to be a “copy” from other individual’s assignment, all students involved will receive 0 (zero) points grade for that assignment.

#### Assignment Submission

In this course Blackboard will be used as much as possible for assignment submissions (and grading) for all students.

If you are sick, please do not come to class or campus to turn in work. Instead notify the course instructor as soon as possible, so that accommodations can be made.

#### A Note about the Exams

Students will have the flexibility to take exams posted on Blackboard either in the classroom or any other location with a internet connection. A student taking an exam via Blackboard in a location other than the classroom will be required to have his/her webcam and microphone on during the entire duration of the exam.

#### Attendance Statement

According to NDSU Policy 333 ([www.ndsu.edu/fileadmin/policy/333.pdf](http://www.ndsu.edu/fileadmin/policy/333.pdf)), attendance in classes is expected.

Attendance in classes is expected and important. (The term “class” includes class, online class, laboratory, field trips, group exercises, or other activities related to the course). However, there are instances in which students are unable to attend class, and if those are described in policy 333, then those absences will be excused. Absences not covered under policy 333 are excusable at the discretion of the instructor. However, class policies regarding class absence are provided below.

If a student will be missing class for an event related to university clubs or teams, or other excusable reason to be determined by the instructor, the student must let the instructor know before he/she misses the class. Consideration will be given to those students who have a valid excusable reason when making a determination regarding making up assignments or tests.

- **Students that can not attend the class in-person due to medical condition or other reasons may seek an accommodation through the Disability Services (701-231-8463; <https://www.ndsu.edu/disabilityservices/>).**

#### Dead Week Policy

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

#### 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 and are encouraged to provide Activation Orders.

#### Students with Special Requirements

Any students with disabilities who need accommodations in this course are invited to share these concerns or requests with the instructor and contact the [Center for Accessibility and Disability Resources](#) as soon as possible.

## PAG 215 – MAPPING OF PRECISION AG DATA

### FALL 2024

#### Academic Honesty

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 <http://www.ndsu.edu/academichonesty>.

#### Family Educational Rights and Privacy (FERPA)

Your personally identifiable information and educational records as they relate to this course are subject to FERPA.

#### Use of Cell Phones 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 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.

#### Important Dates

Full NDSU dates/deadlines can be found [here](#).

Aug 26	Mon	Classes begin at 4:00 p.m.
Aug 27	Tue	First full day of classes
Sep 2	Mon	HOLIDAY — Labor Day (no classes, offices closed)
Sep 2	Mon	Last day to be added to Campus Connection Wait Lists
Sep 4	Wed	Last day to Add classes via Campus Connection* Permit needed after this date.
Sep 4	Wed	Last day for no-record Drop of classes @ 100% refund* (full semester classes only)
Sep 4	Wed	Last day to Withdraw to Zero Credits @ 100% refund*(full semester classes only)
Sep 10	Tue	Financial aid applied to NDSU account balances
Sep 11	Wed	Payments due for NDSU account balances
Oct 4	Fri	Last day to Withdraw to Zero Credits @ 75% refund*(full semester classes only).
Oct 15	Tue	Late fees applied to unpaid account balances (11:59 p.m.)
Oct 21	Mon	2nd half (8-week session) of Fall semester begins
Nov 3	Sun	Last day to Withdraw to Zero Credits @ 50% refund*(full semester classes only). No refunds issued for withdraw to zero credits after this date.
Nov 11	Mon	HOLIDAY — Veterans Day Observed (no classes, offices closed)
Nov 15	Fri	Last day to Drop classes with 'W' record
Nov 15	Fri	Last day to Withdraw to Zero Credits for Fall
Nov 15	Fri	Late fees applied to unpaid account balances (11:59 p.m.)
Nov 27-29	Wed-Fri	HOLIDAY — Thanksgiving (no classes; offices closed Thurs only)

**PAG 215 – MAPPING OF PRECISION AG DATA**

**FALL 2024**

Dec 9-13	Mon-Fri	Dead Week
Dec 13	Fri	Last day of Fall classes
Dec 16-20	Mon-Fri	Final Examinations
Dec 20	Fri	Commencement ceremony

Course Schedule/Outline

Tentative lectures schedule. Schedule can change due to unforeseen circumstances.

<b>Week</b>	<b>Date</b>	<b>Topics</b>
1	Aug 27	Class introduction
1	Aug 29	GIS Review
2	Sep 3	GIS Review
2	Sep 5	Data mapping in precision ag
3	Sep 10	Data mapping in precision ag
3	Sep 12	Mapping soil data
4	Sep 17	Mapping soil data
4	Sep 19	NRCS Web Soil Survey
5	Sep 24	John Deere Operations Center
5	Sep 26	John Deere Operations Center
6	Oct 1	John Deere Operations Center
6	Oct 3	John Deere Operations Center
7	Oct 8	Case IH AFS Connect
7	Oct 10	Case IH AFS Connect
8	Oct 15	<b>Exam 1</b>
8	Oct 17	Case IH AFS Connect
9	Oct 22	Case IH AFS Connect
9	Oct 24	Climate Field View
10	Oct 29	Climate Field View
10	Oct 31	Climate Field View
11	Nov 5	Climate Field View
11	Nov 7	AgLeader SMS
12	Nov 12	AgLeader SMS
12	Nov 14	AgLeader SMS
13	Nov 19	AgLeader SMS
13	Nov 21	AgLeader SMS
14	Nov 26	AgLeader SMS

**PAG 215 – MAPPING OF PRECISION AG DATA**

**FALL 2024**

<b>14</b>	Nov 28	NO CLASS – THANKSGIVING HOLIDAY
<b>15</b>	Dec 3	AgLeader AgFinity
<b>15</b>	Dec 5	AgLeader AgFinity
<b>16</b>	Dec 10	Content Review
<b>16</b>	Dec 12	Content Review
<b>17</b>	<b>Dec 17</b>	<b>Final Exam – 8:00 am</b>

Tentative labs schedule. Schedule can change due to unforeseen circumstances.

<b>Week</b>	<b>Date</b>	<b>Topics</b>
<b>1</b>	Aug 29	GIS Overview – Introduction of GIS software
<b>2</b>	Sep 5	Creating soil fertility maps
<b>3</b>	Sep 12	Creating soil fertility maps
<b>4</b>	Sep 19	Field Trip
<b>5</b>	Sep 26	John Deere Operation Center practice 1
<b>6</b>	Oct 3	John Deere Operation Center practice 2
<b>7</b>	Oct 10	Case IH AFS Connect practice 1
<b>8</b>	Oct 17	Case IH AFS Connect practice 2
<b>9</b>	Oct 24	Climate FieldView practice 1
<b>10</b>	<b>Oct 31</b>	Climate FieldView practice 2
<b>11</b>	Nov 7	AgLeader SMS practice 1
<b>12</b>	Nov 14	AgLeader SMS practice 2
<b>13</b>	Nov 21	AgLeader SMS practice 3
<b>14</b>	Nov 28	NO CLASS – THANKSGIVING HOLIDAY
<b>15</b>	Dec 5	AgLeader AgFinity practice 1
<b>16</b>	Dec 12	AgLeader AgFinity practice 2