

Course Prefix/Number/Title: UAS 210 – UAS Applications in Agriculture

Number of Credits: 2

Course Description: This course explores the use of small Unmanned Aircraft Systems (sUAS) in precision agriculture. Crop monitoring, crop scouting, yield assessments, weather damage, and precision crop spraying will be investigated. sUAS software and agricultural image processing will also be examined. Legal and environmental considerations will be reviewed as it pertains to safe and ethical use of sUAS in precision agriculture.

Pre-/Co-requisites: UAS 101; UAS 102

Course Objectives: Upon successful completion of this course students will be able to:

1. Understand the current agricultural applications and uses of sUAS.
2. Describe the differences in the types and designs of various unmanned systems.
3. Understand the regulations and restrictions on sUAS ownerships and operations.
4. Analyze the strategy and economics of incorporating sUAS into various industries.

Instructor: Linda Burbidge, PhD

Office: Molberg 20

Office Hours: MW 2:00pm – 3:00pm & Tu Th 10:00am – 11:00am

Phone: 701-228-5442

Email: Linda.Burbidge@dakotacollege.edu

Lecture Schedule: TH 8:55am-9:55am, Molberg 28, 1st – 12 weeks

Textbook(s): Material will be provided throughout the semester.

Course Requirements: This is an introductory course. Students are expected to read the materials and come to class prepared to listen and discuss during lectures. Points will come from homework, professionalism, four exams, and a course project. The breakdown will be as follows:

Requirement	Percentage
Homework	30%
Professionalism	10%
Course Presentation	30%
Exams	30%
Total	100%

Homework: There will be a combination of assigned readings and traditional assignments. Homework must be submitted on time to receive full credit. Late homework will be accepted with a deduction of 20%.

Professionalism: In preparation for the real world, your class grade will be dependent upon professionalism. This means you will be graded on a combination of attendance, engagement in learning, and meeting deadlines.

Course Presentations: Each student will put together a presentation on the type of UAS and equipment best suited for their future plans in Agriculture. More details forthcoming.

Exams: There will be 2 exams over the material covered during the semester, a midterm and a final. Each will be worth 90 points. Exams will be administered on Blackboard.

*Make up exams are offered only under extenuating circumstances. All make-up exams should be taken within a week of the missed exam.

Grading and Evaluation:

Total Point Percentage	Letter Grade
90% and ↑	A
80% - 89.99%	B
70% - 79.99%	C
60% - 69.99%	D
59.99% and ↓	F

Tentative Course Outline:

Week of:		Topic
Jan 10 – Jan 14	Background on Drones, Flight and Precision Ag	Overview of Ag and Precision Ag/History of UAS in Ag
Jan 17 – Jan 21		UAS in Ag/Drone types & designs
Jan 24 – Jan 28	Drone Designs and Equipment Payloads and Sensors	Drone types & uses/Special Equipment
Jan 31 – Feb 4		Payload
Feb 7 – Feb 11		Review/Exam #1
Feb 14 – Feb 18		Weather
Feb 21 – Feb 25	Safety, Economics, and Mission Planning	Safety
Feb 28 – Mar 4		Do I need to be certified?/
Mar 7 – Mar 11		Cost Effectiveness/Scope
Mar 14 – Mar 18		Spring Break
Mar 21 – Mar 25		Mission Planning
Mar 28 – Apr 1		Mission Planning
Apr 4 – Apr 8		Catch-up/Review /Final

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s): This course meets the CTE department learning outcome of employing industry-specific skills in preparation for workplace readiness by:

1. Demonstrate problem-solving aptitude.
 - a. Identify appropriate equipment to use in the field.
 - b. Determine weights and payloads appropriate for different UAS.
2. Expand critical thinking competence.
 - a. Assess weather, weight, and other risk factors to ensure safe flight.
 - b. Understand how the scope and scale of your mission affects specific choices about equipment needed to complete each mission.

Relationship to Campus Focus: This course addresses the campus theme of Nature, Tehnology, and Beyond by incorporating the latest procedures, technologies and innovative designs of unmanned aircraft systems and their operations.

Classroom Policies: Be polite and respectful of the instructor, other students, and any guests in our class. We will follow any COVID-19 classroom policies currently in force by the University system.

Student Email Policy: Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity: According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs: Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX: Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.