



Course Prefix/Number/Title: UAS 101 – Introduction to UAS Operations

Number of Credits: 3

Course Description: This course explores the history, designs, operations, regulations, and economics of small Unmanned Aircraft Systems (sUAS). Students will explore common uses of sUAS's such as precision agriculture, public safety, communications, aerial filming, resource management, and research. Legal and environmental considerations will be discussed as well as business opportunities and growth areas. The course will also examine future applications of sUAS operations, with an emphasis on commercial and public applications.

Pre-/Co-requisites: None

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

1. Understand the current 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 & TH 9:00am – 10am

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Lecture Schedule: MWF 7:55am-8:55am, Molberg 28, 1<sup>st</sup> – 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 provided 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:

<b>Requirement</b>	<b>Points</b>	<b>Percentage</b>
Homework	180	30%
Quizzes	90	15%
Professionalism	60	10%
Course Presentation	120	20%
Exams	150	25%
<b>Total</b>	<b>600</b>	<b>100%</b>

Homework: There will be a combination of assigned readings and traditional assignments. Homework must be submitted on time to receive full credit. We will use a flight simulator to practice flight and get comfortable using controllers and concepts in class. These modules will be included in your homework. Late homework will be accepted with a deduction of 20%.

Quizzes: There will be a total of 4 quizzes throughout the semester. This will allow the instructor to identify gaps in lecture coverage and shortcomings in student learning. Quizzes will be administered on Blackboard.

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 an area of sUAS that is of interest to them. 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 75 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:

<b>Week of:</b>	<b>Section</b>	<b>Topics covered:</b>
Jan 12 – Jan 15	Introduction to UAS	What is UAS/History of UAS
Jan 18 – Jan 22		<b>MLK Jr. Holiday</b>
Jan 25 – Jan 29		Applications of UAS
Feb 1 – Feb 5	Introduction to Flight	Applications of UAS
Feb 8 – Feb 12		Flight Concepts/Types of sUAS
Feb 15 – Feb 19		Types of sUAS/ Design Options
Feb 22 – Feb 26	Safety	<b>President’s Day Holiday</b>
Mar 1 – Mar 5		Software and Related Components
Mar 8 – Mar 12		FAA Rules and Regulations
Mar 15 – Mar 19	Economic and Logistical Considerations	Airspace Considerations
Mar 22 – Mar 26		Purchase Considerations
Mar 29 – Apr 2		<b>Spring Break</b>
Apr 5 – Apr 9		<b>Spring Break</b>
Apr 12 – Apr 16	Review	Mission Planning
Apr 19 – Apr 23		Flight logging basics/Post flight considerations
Apr 26 – Apr 30		<b>Final Exam</b>
May 3 – May 7		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 application of UAS in various real-world settings
  - b. Be aware of the regulations for safe flight.
2. Expand critical thinking competence.
  - a. Understand the legal challenges around drone flight and technology.
  - b. Compare different UAS designs
  - c. Determine appropriate use various UAS designs.

Relationship to Campus Focus: This course addresses the campus theme of Nature, Technology, 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.