Course Prefix/Number/Title: UAS 118 – UAS Repair and Maintenance

Number of Credits: 3

Course Description: This course provides students with the knowledge and skills required to repair and maintain drones. Topics include hardware identification, basic maintenance, troubleshooting, software and firmware updates, soldering, and replacing consumable parts.

Pre-/Co-requisites: None

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

1. Identify the hardware components of drone systems.
2. Perform routine maintenance and repairs on drones.
3. Troubleshoot and resolve common hardware and software issues.
4. Replace consumable parts and perform soldering tasks.

Instructor: Jo Leader

Office: Molberg 26

Office Hours: M 9AM-11AM and W 2-4PM.

Phone: 701-228-5419

Email: josephine.leader@dakotacollege.edu

Lecture Schedule: In-person

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

Course Requirements: This is an introductory course. Students are expected to come to class prepared to listen and discuss during lectures. Points will come from quizzes, hands-on and/or simulation participation, discussions, and exams. The breakdown will be as follows:

Requirement	Percentage
Quizzes	20%
Homework	30%
Lab/Sim Participation	25%
Exams	25%
Total	100%

Homework: There will be a combination of traditional assignments, reading, discussion posts and hands-on troubleshooting/maintenance. Homework must be submitted on time to receive full credit. Late homework will be accepted with a deduction of 20%.

Quizzes: There will be a total of 11 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.

Discussions: Each student will be required to participate in discussion posts and respond to three classmates.

Exams: There will be two exams over the material covered during the semester, a midterm and a final.

*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:	Topics covered:
Week 1	Safety Management
Week 2	Tool Identification and Field Kit Preparation
Week 3	Battery Management and Safety
Week 4	Consumable Parts Repair
Week 5	Components and Hardware Identification
Week 6	Basic Maintenance
Week 7	Diagnostics and Troubleshooting (In field/Out of field)
Week 8	Repair Techniques (In field/Out of field)
Week 9	Advanced Troubleshooting and Repair
Week 10	Hardware Simulation
Week 11	Hands-On Day 1: Consumables and Cleaning
Week 11	Hands-On Day 2: Consumables and Cleaning
Week 12	Soldering Crash Course
Week 13	Hands-On Day 1: Soldering
Week 13	Hands-On Day 2: Soldering
Week 14	Field Testing and Calibration of a Repaired Drone
Week 15	Review
Week 16	**Final**

General Education Competency/Learning Outcome(s) <u>OR</u> 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. Demonstrating problem-solving aptitude:
a. Understanding safety protocols.
b. Implementing safety plans and procedures.

2. Expanding critical thinking competence:
a. Using troubleshooting resources.
b. Identifying hardware components and circuits.
c. Understanding and utilizing tools for hardware troubleshooting.

3. Developing hands-on skills:
a. Managing and replacing consumable parts and performing routine cleaning tasks.
b. Safely soldering components.

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 repair and maintenance.

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.