

Virginia Community College System (VCCS)
Unmanned Systems (UMS) Approved Courses

UMS 211 Small Unmanned Aircraft Systems (sUAS) II

Course Description:

Advanced UAS mission planning and operation of small Unmanned Aircraft Systems (sUAS). Topics include mission planning, operations, communications, autonomous flights, ground control station operations, crew management, emergency procedures, safety/air vehicle pilot checklist procedures, sensor selection, data collection, and analysis. Also includes advanced coverage of maintenance, operations support, and introduces geospatial product workflow. Emphasizes the ethical, legal, and safe use of sUAS.

Lecture 2 hours per week. Lab 2-3 hours per week. Total 4-5 hours. 3 credits

Course Prerequisites/Corequisites

Prerequisite: UMS XX1 Small Unmanned Aircraft Systems (sUAS) I

General Course Purpose

This course builds on the introductory operational concepts provided in UMS XX1 Small Unmanned Aircraft Systems (sUAS) I. It provides in-depth coverage of the operational requirements needed to plan and complete advanced manual and autonomous missions while meeting FAA regulations covering the operation of sUAS. It adds additional coverage in all areas including piloting, crew management, maintenance, cyber security, data processing, and risk management.

Course Objectives

Upon completion of this course, the student will be able to:

- Plan and implement advanced UAS missions, both manual and autonomous, to collect and analyze data.
- Perform the operations required to support advanced missions, e.g. plan, fly, collect data, maintain, repair, select sensors, collect/analyze data, and report results.
- Recognize the requirements of completing advanced missions in controlled airspace.
- Perform risk assessment and produce operational procedures to address issues.
- Provide customers with products based on their requirements.

Major Topics to be Included:

- Planning and completing advanced manual and autonomous missions including small unmanned aircraft system rating privileges, limitations, and complex flight operations, both fixed wing and multi-rotor.
- Use and limitations of the United States airspace classification, operating requirements, and flight restrictions affecting small unmanned aircraft operation in advanced mission planning.
- Multiple aviation weather sources and effects of weather on small unmanned aircraft performance.
- Sensor selection and processing requirements for intermediate autonomous missions.
- Determining the performance of small unmanned aircraft with modified sensor platforms.
- Application of knowledge of risk assessment and emergency procedures.
- Application of crew resource management during completion of an advanced mission.
- Radio communication procedures and use in the completion of advanced missions.
- Performance evaluation of small unmanned aircraft with modified platforms.
- Knowledge and application of advanced maintenance and preflight inspection procedures.
- Recording and reporting required FAA documents pertinent to accidents, maintenance, flight paths, and other situations as required.
- Application of safety and security procedures as applies to physical aircraft and wireless communication.