

University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000

General Syllabus

UAS 2124 Multi-Rotor Flight Lab

Credit Hours: 4

Lecture Hours: 3

Laboratory Hours: 2

Prerequisites: UAS 1143 UAS Pilot Flight Operations

Effective Catalog: Fall 2020

I. Course Information

A. Catalog Description

Flight training on multi-rotor unmanned aircraft starting with a visual simulator and concluding with a photography-grade, student-built multi-rotor aircraft. Specific training on applications of multi-rotor UAS for inspections and aerial filming.

B. Additional Information

This course provides an in-depth, hands-on approach to multi-rotor UAS operations. Proper setup; rigging; weight and balance techniques; and autopilot/payload integration will be emphasized.

II. Student Learning Outcomes

A. Subject Matter

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

1. Describe and demonstrate specifying and testing a multi-rotor UAS.
2. Integrate and configure autopilot/flight control system, payload, and data links.
3. Demonstrate safe operation (flying) of a multi-rotor aircraft using visual line of sight operations and first-person viewing operations.
4. Demonstrate the use of a multi-rotor UAS in prototypical workplace mission applications and scenarios.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking: Students will draw conclusions and/or solve problems. They will access and evaluate appropriate information through electronic means and think critically to reach viable solutions to a problem and to justify those solutions.

Quantitative Reasoning: Students will solve problems, represent mathematical information symbolically, visually, numerically and verbally and interpret data needed using multi-rotor UAS for inspections and aerial filming.

III. Major Course Topics

- A. System Safety
- B. Multi-rotor flight mechanics
- C. Multi-rotor aircraft fabrication and performance
- D. Autopilot integration
- E. Flight safety and operations
- F. Principles of flight testing
- G. Visual Line of Sight (VLOS) Flight Operations
- H. First Person Viewing (FPV) Flight Operations