## Course Information

**Catalog Description:** This course provides an in-depth exploration of Unmanned Aircraft Systems (UAS) operations under Federal Aviation Administration (FAA) regulations for Part 91 (General Operating and Flight Rules), Part 135 (Air Carrier and Operator Certification), and Part 137 (Agricultural Aircraft Operations). Students will learn the regulatory requirements, operational considerations, and safety protocols necessary for compliance and efficient performance in diverse UAS applications, including commercial, agricultural, and passenger transport services. Through a combination of lectures, case studies, and practical simulations, students will develop the skills needed to navigate FAA regulations, conduct risk assessments, and execute operations that meet legal and industry standards. The course is designed for individuals seeking careers in UAS operations or professionals aiming to enhance their understanding of advanced UAS operational frameworks.

**Prerequisite(s):**

**Corequisite(s):**

**Credits:** 3

**Hours:** 3

**Required Text(s):**

- Terwilliger, B., & Spitzer, D. (2017). *Small unmanned aircraft systems guide: Exploring designs, operations, and regulations*. ISBN: 978-1619543980

**Supplemental Materials:** FAA's official guides on Parts 91, 135, and 137

## Instructor Information

**Instructor's Name:**

**Contact Information:**

**Office Hours:**

## Program Goals

1. Equip students with comprehensive knowledge of unmanned systems, including their standards, regulations, and operational frameworks, preparing them for FAA Part 107 certification and other regulatory requirements.
2. Develop proficiency in using geographic information systems (GIS) and remote sensing technologies, enabling students to analyze and interpret spatial data for applications in environmental monitoring, urban planning, and emergency response.
3. Foster a strong understanding of safety protocols, risk management strategies, and security measures in unmanned aviation to ensure compliance with industry standards and promote operational excellence.
4. Provide hands-on training in maintaining, repairing, and optimizing unmanned aircraft systems (UAS) to extend operational life and enhance performance in various industry settings.
5. Introduce students to advanced robotics, programming, and cutting-edge technologies, including infrared thermography and digital photography, to expand their expertise in innovative applications of unmanned systems.
6. Equip students with the skills and knowledge to contribute to the development and operation of innovative unmanned aerial transportation systems, addressing future urban and regional mobility challenges.

## Class Core Competencies

The following core competencies are embedded in this curriculum:

- Communicate effectively in both speech and writing.
- Apply appropriate mathematical and statistical concepts and operations to interpret data to solve problems.
- Use scientific method of inquiry, through the acquisition of scientific knowledge.
- Use computer systems or other appropriate forms of technology to achieve educational and personal goals.
- Address an information need by locating, evaluating, and effectively using information.

## Class Learning Assessment

| Student Learning Outcomes | Suggested Means of Assessment |
|---|---|
| Interpret FAA regulations for Part 91, Part 135, and Part 137 operations | Written examinations, case study analyses |
| Evaluate operational requirements for different UAS missions within commercial, agricultural, and general aviation contexts | Research-based assignments comparing operational criteria across Part 91, Part 135, and Part 137; Practical scenario-based projects |
| Develop and implement safety management protocols for UAS operations | Group project, safety audit checklists |
| Demonstrate proficiency in planning and executing UAS operations in compliance with FAA regulations | Practical flight simulations with documented compliance to regulations, oral presentations defending operational decisions and compliance measures |
| Conduct risk assessments and mitigation planning for UAS missions under varying operational conditions | Risk assessment reports, role-playing exercises |

## Grading System

| Letter Grade | Percentage Range |
|---|---|
| A | 90 to 100 percent |
| B Plus (B+) | 87 to 89.9 percent |
| B | 80 to 86.9 percent |
| C Plus (C+) | 77 to 79.9 percent |
| C | 70 to 76.9 percent |
| D | 60 to 69.9 percent |
| F | Below 60 percent |

## College Information

**Disability Services**
Disability Services Webpage

**Statement and Policy on Cheating, Plagiarism, and Academic Conduct**
Academic Conduct Policy (Policy 304) [PDF]

Students are required to perform all the work specified by the instructor and are responsible for the content and integrity of all academic work submitted. A violation of academic integrity will occur if a student: (1) knowingly represents work of others as one's own, (2) uses or obtains unauthorized assistance in any academic work, (3) gives fraudulent assistance to another student, or (4) furnishes false information or other misuse of college documents.

Unauthorized use of Artificial Intelligence (AI) is prohibited unless the instructor explicitly permits it in the syllabus or assignments. If tools such as ChatGPT are permitted by an instructor to be used for an assignment, they should be used with caution and with proper citation. In all such cases, you may only use the specific tools identified as acceptable and you must adhere to the College's standards for attribution, validation, and transparency.

In cases of suspected violation of academic integrity, the incident is to be reported to the Office of Academics. A student found guilty of violating the rule of academic integrity by the Vice President of Academics will be considered to have failed in personal obligation to the College; such failure will be subject to disciplinary action by the College. Unless otherwise notified, the instructor will allow students who are pending disciplinary action to attend class.

**Tutoring and Testing at the Instructional Support Center (ISC)**

- Instructional Support Center (ISC) Webpage

**WCCC Library Services**

- WCCC Library Website

**Citation Styles and Formatting**

Work submitted for any Warren County Community College course must conform to the required formatting and citation style that are specified by the instructor. The Library and Instructional Support Center can assist students with formatting and citations for assignments and papers.

**WCCC Attendance Expectations**

The College expects students to attend and participate in all classes. This involves sharing discussions and lectures in class, as well as interacting with other students. Grades are based on the quality of work students complete in meeting the requirements for a particular course, as stated in the course syllabus and catalog description.

Attendance, among other factors, may be an additional criterion for assigning grades. Students should realize that they are responsible for all class meetings and that work missed because of absences may affect their grades. Attendance in online classes is determined by the completion of assignments/ tests. Students who have not completed any assignments or tests will be considered non-attending and receive an NF grade in online classes.

**Class Attendance Expectations**

## Topical Outline

1. Introduction to UAS Operations and FAA Regulations
    a. Overview of Part 91, Part 135, and Part 137
    b. Importance of compliance with FAA standards
    c. Applications of UAS in commercial, agricultural, and transport contexts
2. FAA Part 91: General Operating and Flight Rules
    a. Airworthiness standards and requirements
    b. Operational limitations
    c. Legal and safety considerations
3. FAA Part 135: Air Carrier and Operator Certification
    a. Certification process and requirements
    b. Operational control and management
    c. Specifics of passenger and cargo transport operations
4. FAA Part 137: Agricultural Aircraft Operations
    a. Certification and operational requirements
    b. Safety protocols for agricultural missions
    **c.** Risk mitigation in agricultural environments

## Grading Methods

| Assignment | Points/Percentage |
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| Assignment | Points/Percentage |
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## Class Itinerary

| Week / Unit | Topic | Readings/Assignments |
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