



DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
ECE 251 Syllabus – Spring 2026

Overview

Unmanned Aerial Systems (UAS) are redefining modern warfare, demanding that future military leaders be both technically proficient and operationally capable. Regardless of your academic discipline or career field, ECE251 will equip you with the foundational flying skills and technical understanding to operate and analyze FPV (First-Person View) drone systems, preparing you for success in the Air Force, Space Force, and beyond.

Instructors

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Course Goals

In ECE251, cadets will explore the principles of flight, radio communication, and electronic systems through the hands-on experience of flying FPV drones. By the end of the course, cadets will be equipped to operate FPV drones in various flight modes, execute basic maneuvers, and troubleshoot common system issues. This skill set will support well-informed decision-making and the development of systems-level solutions for air, space, and cyberspace operations while addressing real-world constraints.

Course Materials

The course website contains the course schedule, videos/readings, lesson slides, and more. The website may be updated when necessary, so bookmark it and return to it often.
<https://usafa-ece.github.io/uas/intro.html>

Course Communication

- **Teams** All communications regarding the course will be through Teams.

ECE251 is a zero credit-hour course, and the final grade will be Pass or Fail. During this course there will be one category of graded events that will determine your pass or fail status. Consult the Course Schedule for when specific graded events will be conducted.

Operational Assessments

Operational assessments are quizzes that evaluate your practical flight proficiency and are conducted at the start of the subsequent class after the lesson. Students must pass each OA with a score of at least 75%. Attempts are unlimited.

1. Instructor Philosophy

As your instructors, we are committed to fostering an inclusive environment where every cadet can have fun and discover something new about the world of FPV. We'll ensure you have the tools and support you need to succeed if you put in the effort and communicate with us. If something doesn't feel right, don't hesitate to speak up—we are committed to making this a space where everyone thrives.

2. Absences

If you know you will miss class (illness, appointment, SCA-excusal, etc.), notify your instructor in advance via Teams. You are still required to complete operational assessments for missed lessons. Three absences (excused or otherwise) will result in an Incomplete grade.

3. Extra Instruction

EI is offered any time a student feels additional help/practice would aid their learning. You can message your instructor via Teams with questions.