Printable Course Overview

Course: Flying and Coding with CoDrone
Grade Levels: 3-8
Time Required: 15x 1-hour class periods

Course Description

What exactly is a drone? How do they work? What are they used for? Believe it or not, the first radio-controlled drone was built in 1935 by the British. Since then, drones have been used in many sectors and industries. For instance, they are used for surveillance, deliveries, search and rescue, infrastructure inspections, agricultural and ecological monitoring, and many more. They are sophistical aerial robotics that take advantage of the physics of flight, miniaturized electronics, control algorithms, and advanced programming techniques to maneuver themselves wherever they are needed. This course introduces drone mechanics and allows students to fly and program drones using the CoDrone Edu with manual piloting via RF-based Smart Controller, and autonomously via Block-based coding software, Blockly. The CoDrone Edu is a compact, camera-less drone, with a unique 7-sensor package, enabling classroom and/or gymnasium focused instruction in an accessible and friendly manner, preparing students for even aerial drone design competitions. The sky is the limit with drone technology!

Required Materials

- Lesson plans
- Lesson presentations
- Printable student activity sheets (laminating STEM Flight Path Layout Printables recommended)

- School-appropriate computers/tablets with internet access
- Access to school-approved search engines
- Access to Blockly Software
- Teacher connection to projector for display of videos and presentations
- Drawing utensils such as crayons or colored pencils
- Mini whiteboards and dry erase markers
- Rulers
- Calculators

Standards Alignment

All lessons in this course are aligned to and/or support education standards from the following organizations: Common Core Math, NGSS, ISTE, STEL, 21st Century Skills, and relevant state standards from all 50 US states. Review the scope and sequence document or specific lesson plans for a complete list of standards covered in each lesson.

Curriculum Overview

Mini-Unit	Lesson Title	Materials Required
Unit 1: Drone Basics, Flight Foundations, and Safety	1: Be Clear of Your Drone Gear	• Presentation (with videos) • Lesson Plan • CoDrone EDU (Teacher Demo) • Drone model/diagram/images • Safety checklist handouts • Safety tips flashcards (Grades 3–5 & 6–8) • Markers, mini-whiteboards, student journals
	2: Staying Aloft and In Control	• Presentation (with videos) • Lesson Plan • Drone diagrams on forces & control levers • Popsicle sticks, marshmallows, cardboard sheets • Tape, glue, scissors, markers • Fans (wind simulation)

		• Student worksheets (Grades 3–5 & 6–8)
	3: Practice Makes Good Flight	• Presentation (with videos) • Lesson Plan • CoDrone EDU drone + controller • Extra batteries & charging stations • Launch/landing mats • Safety glasses (goggles) • Pre-/Post-flight checklists & piloting guide printables
Unit 2: Programming and Logic	4: Blockly Software Basics for Takeoff & Landing	"• Presentation • Lesson Plan • CoDrone EDU drone hardware (1 per team) • Blockly-compatible computers/tablets • Projector/screen for demo • Launch/landing mats • Pre-/Post-flight checklists"
	5: Creative Flight Loops	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible computers/tablets • Projector/screen • Launch/landing mats • STEM Flight Path Layout printable"
	6: Code Reusability, What's Your Function?	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible computers/tablets • Projector/screen • Launch/landing mats • Pre-/Post-flight checklists"
Unit 3: Sensor Integration and Data Collection	7: Sensing Without Seeing	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible

		computers/tablets • Cardboard panels for obstacle simulation • Safety glasses • Launch/landing mats"
	8: Precision Hovering and Landing	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Colored paper (Red, Green, Blue) • Graphing paper & rulers • Safety glasses • Launch/landing mats"
	9 :Data Time with Sensors Galore	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible computers/tablets • Colored paper & graphing paper • Safety glasses • Launch/landing mats"
Unit 4: Design Thinking and Engineering	10: Is Your Drone Weighed Down?	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Paper clips (payload simulation) • Tape & lightweight paper • Safety glasses • Launch/landing mats"
	11: Reconsidering Flight Times	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Fans (wind simulation) • Mini-calculators • Popsicle drones (reuse) • Safety glasses"
	12: Flight Path Mapping and Optimizations	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Mini-calculators • Rulers & graphing paper • Safety glasses

		• Launch/landing mats"
Unit 5: Real-World Applications and Capstone Design	13: AI - Public Protection and Disaster Relief	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible computers/tablets • Mini-calculators • Safety glasses • Launch/landing mats"
	14: Drone Career Pathways Exploration	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Computers/tablets for research • Projector/screen • Student journals • Safety glasses"
	15: Design Your Most Sophisticated Flights	"• Presentation • Lesson Plan • CoDrone EDU drone hardware • Blockly-compatible computers/tablets • Mini-calculators • Safety glasses • Launch/landing mats"