Fairfax Collegiate

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Intro to Drones 5-6 Syllabus

Course Goals

1 Getting Ready to Fly
Students learn the basic physics of flight and are introduced to the components of unmanned aircraft systems (UAS). Students also study the current regulations governing drone use and the various degrees of airspace restriction.

2 Flying
Students pilot a drone from the ground, practicing various maneuvers to perform an assortment of tasks.

3 Teamwork and Problem-Solving
Students complete team-based challenges to transport payloads, perform area surveillance, and create collaborative works of art.

Course Topics

1 Science of Flight
Students learn how aircraft fly and the vocabulary for discussing various aircraft systems.

2 Drone Safety
Students learn procedures for safe drone operation in a classroom setting, as well as the regulations governing drone use more broadly.

3 Drone Piloting
Students fly several configurations and models of drones, honing their skills by carrying out a variety of missions.

4 Visual Observer Training
Students practice using FAA guidelines to help support UAS pilots from the ground.

5 Search and Rescue
Students work together to aerially seek out and retrieve items of interest.

6 Photography & Videography
Students use drones' onboard cameras to take photos and create aerial video projects.

7 Drone Racing
Students race drones through an obstacle course, using First Person View to provide a front row seat to the action.

Course Schedule

Day 1

Course Introduction
Students are introduced to the instructor and the rules of the class.

What Is a Drone?
Students learn about basic principles of physics related to flight, and are introduced to the different components of a small Unmanned Aircraft System (sUAS).

Flight Demo
The instructor demonstrates safe operation of a micro-drone indoors.

Hello, Tello!
Students are introduced to the Tello, a programmable microdrone, and the various ways in which it can be controlled.

Drone Selfies
Students use their drones' on-board cameras to take self portraits from a new point of view.

Day 2

Take It Outside: Understanding Airspace
Students learn about the different classes of restricted airspace, and how to determine where they are allowed to fly.

Look, Up in the Sky: Visual Observer Training
Students learn FAA guidelines to act as a visual observer assisting a drone pilot from the ground.

Meet the Phantom
Students learn to pilot a larger drone outdoors and soar to new heights.

Drone On Your Own - Maneuvers Checklist
Students fly on their own for the first time, practicing by carrying out a series of different maneuvers.

Day 3

Drone Search and Rescue
Students work together as a search team to locate toy "victims" and air-lift them to safety.

Short-Order Drones
Students compete to complete a string of restaurant-style delivery orders via drone.

Day 4

Video Pre-Production
Students watch some examples of film scenes shot with drones, then brainstorm a class video project of their own.

Video Production
Students assume different roles on a film set to bring their vision to life.

Video Post-Production
Students review and edit their footage on a computer to create a finished film.

Day 5

Scavenger Drones
Students use their drones to look for a list of items, taking pictures as they find each one.

Hide and Drone Seek

Students take turns finding hidden classmates via drone.

Day 6

Drona Lisa: Quadcopter Painting
Students create unique works of art by attaching paintbrushes to their drones

So You Think You Can Drone: Drone Choreography
Students plan and perform a drone "dance routine" set to music.

Day 7

Intro to Drone Blocks
Students use a simple block-based programming interface to code drone flight-paths wirelessly from their computers.

Pseudo-Swarms
Students program a group of drones to fly in formation and create geometric figures.

Day 8

Intro to Drone Racing
Students are introduced to the rapidly growing sport of drone racing, in which racers use head-mounted displays for a front row seat to the action.

Drone Racing Practice
Students navigate a custom course as they grow accustomed to First Person View racing.

Day 9

The Great Drone Race
Students compete in a tournament to become the fastest drone racer.

Day 10

Drone On and On: The Future of Unmanned Aircraft
Students discuss what they have learned in class and what the future may hold as drone technology develops.

Drone Picture Day
Students use the Phantom to take a final class photo.

Updated on 2/10/2021