

About this Curriculum

All about the Tello Drone

- Tello
- Tello EDU
- RoboMaster TT

Unit 1: Safety First

Unit 1 Vocabulary

Unit 1 Concepts

Unit 1 Performance Objectives

- 1.1 – Safety First
 - 1.2 – Your Safety Responsibility
 - 1.3 – Establishing a Safety Culture
 - 1.4 – Workshop Safety Issues
 - 1.5 – Workshop Safety Rules
 - 1.6 – Soldering Safety Rules
 - 1.7 – Educational Regulations
 - 1.8 – Drone Registration
 - 1.9 – Definition of Recreational Use
 - 1.10 – Safe Flying Locations
 - 1.11 – Safe Weather Conditions
 - 1.12 – Safe Flight Clearance
 - 1.13 – Visual Line of Sight
 - 1.14 – Start Out Slowly
 - 1.15 – Propeller Dangers
 - 1.16 – Pre-Flight Inspection
- Unit 1 Summary

Unit 2: Overview of Drone Design

Unit 2 Vocabulary

Unit 2 Concepts

Unit 2 Performance Objectives

- 2.1 – What is a Drone?
 - 2.2 – Drones Are Used for Other Purposes
 - 2.3 – Brief History of Aerial Drones
 - 2.4 – Drone Reputation
 - 2.5 – Development of Small UAVs
 - 2.6 – What’s in a Name?
 - 2.7 – Types of Small UAVs (sUAV)
 - 2.8 – Choosing a Multicopter Configurations
 - 2.9 – Drone Components
 - 2.10 - Current Uses and Future Potential
- Unit 2 Summary

Unit 3: Basics of Flight

Unit 3 Vocabulary

Unit 3 Concepts

Unit 3 Performance Objectives

- 3.1 – What is Aerodynamics?
 - 3.2 – Brief History of Flight
 - 3.3 – Newton’s Laws of Force and Motion
 - 3.4 – Bernoulli’s Principle
 - 3.5 – Airfoils
 - 3.6 – Four Forces of Flight
 - 3.7 – Three Axes of Flight
 - 3.8 – How Multicopters Fly
- Unit 3 Summary

Unit 4: Getting Started with Tello

Unit 4 Vocabulary

Unit 4 Concepts

Unit 4 Performance Objectives

- 4.1 – Organizing a Drone Program
 - 4.2 – The Tello Drone
 - 4.3 – The Tello App
 - 4.4 – Your First Flight
 - 4.5 – Programmable
- Unit 4 Summary

Unit 5: Overview of Programming

Unit 5 Vocabulary

Unit 5 Concepts

Unit 5 Performance Objectives

- 5.1 – Programming Defined
 - 5.2 – Why Learn to Code?
 - 5.3 – Visual Programming vs. Syntax Programming
 - 5.4 - Tello Comparisons for Programming
- Unit 5 Summary

Unit 6: Coding with Scratch

Unit 6 Vocabulary

Unit 6 Concepts

Unit 6 Performance Objectives

6.1 – What is Scratch?

6.2 – Getting Started

6.3 – Basic Flight Skills using Scratch

6.4 – Choosing and Recording Sounds

6.5 – Workshop Safety Rules

6.6 – Adding Sounds to Your Flight Script

Unit 6 Summary

Unit 7: Coding with DroneBlocks

Unit 7 Vocabulary

Unit 7 Concepts

Unit 7 Performance Objectives

7.1 – What is DroneBlocks?

7.2 – Getting Started

7.3 – Get Connected

7.4 – First Flight

7.5 – Saving Your Missions

7.6 – Other Menu Options

7.7 – Creating a Box Pattern

7.8 – Adding Flips

7.9 – Using the Camera Blocks (Mobile App Only)

7.10 – Using Variables

7.11 – Using Math Blocks

7.12 – Using Logic Blocks

7.13 – Using Functions

7.14 – DroneBlocks Curriculum and Membership Options

Unit 7 Summary

Supplement: Learning to Code with Swift Playgrounds

CURRICULUM TIMELINE

This curriculum is thorough while allowing for flexibility. The instructor has the option to teach the entire curriculum and have the students complete all the activities, or the instructor can pick, choose, and/or skip any of the activities or quizzes. Instructors may also decide to include projects of their own. Below is a suggested timeline showing minimum and maximum days for each Unit.

(1 day = 60-minute class)

	Description	Minimum # days (if some activities are skipped)	Maximum # days (if all activities completed)
Unit 1: Safety First	Stresses the importance of adopting a “safety attitude” when building and flying a drone. Covers workshop safety and outdoor flying.	3	5
Unit 2: Overview of Drone Design	Covers nomenclature, reputation, configurations, basic components, and current/future uses of drones. Introduces aerodynamics, Newton’s Laws of Motion, Bernoulli’s Principle, four forces of flight, three axes of flight, how they apply to drone flight.	3	5
Unit 3: Basics of Flight	Introduces aerodynamics, history of flight, Newton’s Laws of Motion, Bernoulli’s Principle, four forces of flight, three axes of flight, how they apply to drone flight. Reveals issues aircraft pilots encounter including airspace, traffic patterns, and safe altitudes.	3	5
Unit 4: Getting Started with Tello	In-depth introduction to the <i>Tello</i> and the <i>Tello App</i> . Discusses the special flight features and functions of the drone.	3	5
Unit 5: Overview of Programming	Covers the purpose and types of programming. Discusses the differences between visual and syntax languages.	3	5
Unit 6: Coding with Scratch	Introduces the Scratch 2.0 Offline drag-and-drop program. Includes discussion of setup using node.js.	5	8
Unit 7: Coding with DroneBlocks	Introduces the DroneBlocks App and discusses it’s use with loops, variables, and functions.	5	8
TOTALS:		25	41