Lego Spike Prime Syllabus

Grades 6-8

Unit 1

Getting Started with SPIKE Prime (3.0)

In this unit, you will learn how to quickly get started with the LEGO SPIKE Prime system and LEGO Education SPIKE programming environment.

A Letter to the Educator

Getting Started with SPIKE Prime

SPIKE Prime Robot Build

Role of the Programmer

Unit 2

Programming the Hub with SPIKE Prime (3.0)

In this unit, you will learn how to control the Light Matrix with sequential programming. You will program the lights to make shapes and display text to give your robot the ability to communicate with the outside world!

Introduction: Roxie the Greeting Robot

Lesson: Light Commands

Mini-Challenge: Smile!

Lesson: Programming a Sequence

Challenge: Advertising!

Unit 3

Robot Movement with SPIKE Prime (3.0)

In this unit, you will learn how to control the basic movement of your SPIKE Prime robot through sequential programming. You will program your robot to perform simple maneuvers and manipulate objects in its environment.

Introduction: Iris Rover	Lesson: Moving Forward	Mini-Lesson: Proportional Relationships
Mini-Challenge: Sequential Movements	Lesson: Turning in Place	Mini-Challenge: Turn Around the Craters
Lesson: Swing Turns	Mini-Challenge: Steer Around the Crater	Big Idea: Planning and Behaviors
Activity: Introduction to Pseudocode	Introduction: LoCoBot	Lesson: Arm Movement
Mini-Challenge: Collecting Spilled Silverware	Challenge: Cleaning the Home	Mini-Lesson: My Blocks

Unit 4

Wait Until & Sensors with SPIKE Prime (3.0)

In this unit, you will learn how to use the sensors on the SPIKE Prime robot. You will program your robot to perform simple sensing behaviors and respond to objects in its environment.

Introduction: CHIMP	What's a Robot?	Lesson: Wait Until Near
Big Idea: SPPA	Lesson: Move Until Near	Big Idea: Program Flow with Wait Until
Activity: Pseudocode	Mini-Challenge: Investigating the Collapsed Building	Lesson: Wait For Green
Lesson: Move Until Red	Mini-Challenge: Forward Until Stop Line	Lesson: Wait Until Pressed
Mini-Challenge: Push Then Move	Lesson: Move Until Pressed	Mini-Challenge: Vacuum Challenge
Challenge: Exploring a Disaster Site		

Unit 5

Capstone: Subterranean Challenge with SPIKE Prime (3.0)

In this unit, you will demonstrate your ability to decompose an open-ended problem into small pieces, and then iterate on a robust solution to the problem.

Introduction: Subterranean Challenge

Challenge Overview

Phase 1A: Drop Wifi Module

Phase 1B: Drive Around

Phase 1C: Drone Mode

Phase 1D: Mapping

Phase 2: Subterranean Challenge

Unit 6

Discrete Decisions with SPIKE Prime (3.0)

In this unit, you will learn how to program the robot to make one-time decisions, repeated decisions, and detect obstacles.

Introduction: Unmanned Cargo Vehicle	Lesson: Turn If Not Clear	Mini-Challenge: Washed Out Roadway
Lesson: Move If Clear	Mini-Lesson: Operators	Mini-Challenge: Detour Detection
Lesson: Looped Decisions	Mini-Challenge: Clearing the Road	Lesson: Nested Decisions
Program Flow with Decisions	Challenge: Investigating the Landslide	

Unit 7

Capstone: Subterranean Challenge with SPIKE Prime (3.0)

In this unit, you will demonstrate your ability to decompose an open-ended problem into small pieces, and then iterate on a robust solution to the problem.

Introduction: Subterranean Challenge

Challenge Overview

Phase 1A: Drop Wifi Module

Phase 1B: Drive Around

Phase 1C: Drone Mode

Phase 1D: Mapping

Phase 2: Subterranean Challenge

Unit 8

Continuous Decisions with SPIKE Prime (3.0)

In this unit, you will learn how to program your robot to detect obstacles and line track with the use of continuous decisions.

Introduction: CoBots	Lesson: Obstacle Detection	Mini-Challenge: CoBot Assist
Lesson: Line Tracking	Mini-Challenge: Line Track Lap	Challenge: Obstacle Line Tracking

Unit 9

Collection and Analysis with SPIKE Prime

Data Collection and Analysis with SPIKE Prime provides students with a hands-on learning experience focused on data collection, analysis, and problem-solving skills using the SPIKE Prime robot and Color Sensor. Through engaging activities and challenges, students learn the importance of data logging in scientific inquiry and problem-solving, in a real-world context.

Introduction	Materials Needed	Understanding the Color Sensor
Data Collection with the Color Sensor	Analyzing Data	Bridge Inspection Challenge