Robotics Engineering Curriculum Map

Primary Course Book: *Tetrix PRIZM* Coding Essentials Student Guide (2018), Pitsco.

TOPICS	Duration	Month(s)
Unit 1: "Building Robots" Mechanical and Electrical Safety, Robot Components Identification and Function, Basic Tools and Assembly, Direct-Drive Chassis, DC Motor, Mounting Sensors	3 weeks	Aug/Sept
Unit 2: "The Shakedown – Rescue Me!" Coding Concepts: Pseudocode, Flowchart, Main Loop, For Loop, While Loop Hardware: Lights, DC Motors, Servos, Arduino Microcontroller Mini-Challenge: SOS and Safety Feature Demonstration	3 weeks	Sept
Unit 3: "Smart Cars, Smart Code" Coding Concepts: Dead Reckoning, Motor Power, Pivot Turns, Called Functions, Autonomous Programming Hardware: Lights, DC Motors, Servos Mini-Challenge: Smart Car City Navigation and Turning Signals	2 weeks	Oct
Unit 4: "Take a Drive by the Numbers" Coding Concepts: Variables, Data Inputs from Sensors, Loops and Function Calls Revisited Hardware: Light Sensor, Ultrasonic Sensor Mini-Challenge: Smart Car City Navigation using Sensors	2 weeks	Oct
Unit 5: "Grippers and Remote Control" Coding Concepts: Comparison Statements, Line Following, Threshold Values Hardware: Gamepad, Tele-Op Control Module, Grippers, Flipper End Effector Mini-Challenge: Throw-It-Away Personal Assistant	1 week	Nov
Unit 6: "Warehouse Competition" Design Concepts: Engineering Design Process, Understanding the Problem, Researching, Brainstorming, Prototyping, Testing and Analyzing, Redesigning and Improving Mini-Challenge: Warehouse Competition	5 weeks	Nov-Dec