

# STEM Robotics 101 Scope & Sequence

## UNIT 1: Robo Intro

- 1.1. What is a Robot?
- 1.2. Introduction to BEST
- 1.3. BEST Kit Overview
- 1.4. Parts Exploration
- 1.5. Introduction to Gear Trains
- 1.6. Faraday Golfing Machine

## UNIT 2: Circuits & Computers

- 2.1. Circuits and Switches
- 2.2. The BEST Circuit
- 2.3. Powering the BEST
- 2.4. BEST Test Circuits (View Mode)
- 2.5. Introduction to Computers
- 2.6. Moore's Law
- 2.7. The BEST Computer
- 2.8. BEST Test Programs (Try Me Mode)

## UNIT 3: Hardware, Software, Firmware

- 3.1. Microprocessors
- 3.2. BEST Firmware
- 3.3. BEST Hardware
- 3.4. BEST Software: On-Brick 5 Step Programming

## UNIT 4: Straight Ahead

- 4.1. "Using the BEST Video Trainer"
- 4.2. "Using the BEST Programming Software"
- 4.3. "Moving Straight"
- 4.4. How Far?
- 4.5. How Fast?
- 4.6. Group Challenge: The Wave

## UNIT 5: Sights, Sounds and Gears

- 5.1. "Move until Dark"
- 5.2. "Move until Sound"
- 5.3. Getting in Gear
- 5.4. Engineering Challenge: Sound Activated Robo-Dragster

## UNIT 6: Taking Turns

- 6.1. "Turning"
- 6.2. Motor Block
- 6.3. Introduction to Flow Charts
- 6.4. Engineering Challenge: Robo-Tagger Challenge

## UNIT 7: Touch, See, Repeat

- 7.1. Digital Information
- 7.2. "Move Until Touch"
- 7.3. "Move Until Near"
- 7.4. "Repeating Behaviors"
- 7.5. Group Challenge: The Robo-Zoo

**UNIT 8: Decisions, Decisions....**

**8.1. “Obstacle Detection”**

**8.2. Advanced Flow Charts**

**8.3. “Line Following”**

**8.4. Engineering Challenge: Sumo-Bots**

**UNIT 9: Get a Grip**

**9.1. Creating Computer Chips**

**9.2. “Arm Control”**

**9.3. My Blocks**

**9.4. Engineering Challenge: Ball Sorter**

**UNIT 10: Wired for Data**

**10.1. “Data Hubs”**

**10.2. “Data Types and Display”**

**10.3. Advanced My Blocks**

**10.4. Engineering Challenge: Line Racer**

**UNIT 11: Wired for Data**

**11.1. “Variables”**

**11.2. “Calculations”**

**11.3. “Logic Loops”**

**11.4. Group Challenge: Follow the Leader**