

REC Unit 1 for Vex V5: Introduction to Robotics

Catalog No.	8115-0010
Category	Mobile Robotics
Duration	15 Hours
Software	VEXcode
	Or any software that can be downloaded to the V5 controller

REC Unit 1: Introduction to Robotics

- Welcome to the Course
- (Core): Introduction to Robotics
- What is a Robot?
- **Robotic Applications**
- Robot System Components
- Section 1.1 Review

1.2 (Core): The Design Cycle

The Design Cycle The Importance of Iterations Section 1.2 Review

1.3 (Activity): Engineering Notebook

Engineering Notebook Guidelines Setting up Your Notebook or Excel File Making Your First Entry Questions



INDUSTRY 4.

1.4 (Core): Safety

What do I protect? Personal Safety Rules Equipment Safety Rules Safety Glasses Robotic Assemblies Classroom Safety Safety Rules Reference Section 1.4 Review

1.5 (Core): VEX Components – Part 1

Inventory Control Structural Components Motion Components Power Components Sensor Components Control Components Programming Components Tools Section 1.5 Review **1.6 (Activity): Vex Components – Part 2**

Classroom Inventory System Identifying Vex Components Engineering Notebook

1.7 (Core): Fasteners

What is a Fastener? Anatomy of a Screw Assembly Tools Section 1.7 Review

INDUSTRY 4,



1.8 (Activity): Chassis Construction

Safety

Assembly Techniques

Assembling the BaseBot Chassis

Engineering Notebook

1.9 (Core): Drive Train

Motors

Gears

Wheels

Bearings

Shafts and Collars

Bringing it All Together

Section 1.9 Review

1.10 (Activity): Drive Train Construction

Gear Alignment Assembling the BaseBot Drive Train Engineering Notebook

1.11 (Core): Robot Brain

Vex V5 Robot Brain Power Supply Battery Maintenance Electrical Connections Section 1.11 Review

1.12 (Activity): Wiring the Robot Brain and Battery

Mounting the Shelf, Battery clips, and Radio Installing the Battery Connecting the Motors to the Brain Engineering Notebook

INDUSTRY 4,



1.13 (Core): Wireless Control

Radio Control Radio Signals What is Frequency? Frequency Channels Wireless Control Section 1.13 Review

1.14 (Activity): Using Wireless Control

Calibrating the Wireless Controller Syncing the Wireless Controller and the Brain Turning on the BaseBot BaseBot Testing Troubleshooting Engineering Notebook

1.15 (Core): Dual Joystick Control (Tank)

Robot Control Default Code Tank Control Section 1.15 Review

1.16 (Activity): Tank Control

Configuring Tank Control Driving the Robot in a Straight Line Mastering Tank Control Engineering Notebook

INDUSTRY 4, 🌣



1.17 (Core): Single Joystick Control (Arcade)

Arcade Control

Jumper Clips

Arcade Default Code Settings

Section 1.17 Review

1.18 (Activity): Arcade Control Operation

Configuring the Brain for Arcade Control Driving the Robot in a Straight Line Mastering Arcade Control Navigating Obstacles in Arcade Control Engineering Notebook

1.19 (Core): Robot Systems Design

Center of Gravity BaseBot Subsystems Specialization Materials Usage Section 1.19 Review

1.20 (Activity): Adding Components to the BaseBot

Mounting the Marker Drawing a Straight Line Tank vs. Arcade Control Drawing Shapes Engineering Notebook

1.21 (Project): Motion Path Challenge

(Project): Basic Motion Path Challenge Initials Challenge (Project): Advanced Motion Path Challenge Cursive Challenge Unit 1 Conclusion