Clawbot With Controller: Pacing Guide

The Pacing guide for each STEM Lab provides step-by-step instructions on What, How and When to teach. STEM Lab pacing guides preview the concepts that are taught in each section (Seek, Play, Apply, Rethink, Know) of the STEM Lab, relate the resources that teachers can use to teach those concepts and identify all the materials that are needed. The Individual STEM Lab Pacing guide contains valuable information below:

- **Pacing -** Provides the approximate time duration of each section of the STEM Lab.
- **Concepts -** Lists the themes that surround the STEM Lab.
- **Delivery -** Provides guidance on teaching strategies for each STEM Lab section to improve student mastery of the content.
- **Materials -** Lists the materials that are essential to completing the STEM Lab.
- **Resources -** Provides the linked content and resources needed by the teacher to complete the lessons and activities.

Section	Pacing	Concepts	Delivery	Materials	Resources
Seek	Building the V5 Clawbot: 150 mins. Discussion Using Exploration Questions: 5 mins.	• Building and Exploring the Clawbot	Student Centered Cooperative Learning	• 1 or more VEX V5 Super Kits • Engineering Notebook	• Controller: Tank Drive Checklist • Build Instructions • Build Rubric • Collaboration Rubric • Engineering Notebook Rubric (Individual Reflections)

Play	Loops: Simplifying Repetitive Action: 5 mins. _____ Controller: Tank Drive Exploration: 40 mins.	• Loops • Forever Loops • Position of the Controller • Motor Velocity	Instructor Modeling Student Centered Cooperative Learning	• Content Pages • Clawbot • Charged Robot Battery • VEXcode V5 • USB Cable (if using a computer) • Engineering Notebook	• Loops: Simplifying Repetitive Action • Controller: Tank Drive Exploration-VEXcode V5 Blocks • Controller: Tank Drive Exploration-VEXcode V5 • Engineering Notebook Rubric (Team Reflections Programming Rubric) • Programming Rubric
Apply	Using Loops to Make Candy: 5 mins. _____ Competition Connection: Driver Control: 10 mins.	• Loops • Event Based Programming • Competitive Robotics	Student Centered Classroom Discussion	• Content Pages	• Using Loops to Make Candy • Competition Connection: Driver Control
Rethink	Event-Based Programming: Communication	• Event-Based • Object Manipulation	Student Centered Independent	• Content Pages • Clawbot with Charged Battery	• Event-Based Programming: Communication Among Blocks*

	: 10 mins. _____ Prepare for the Remix Challenges: 5 mins. _____ Remix Challenges: Clawbot Control: 40 mins. _____ Remix Questions: 10 mins.	• Loops • Forever Loops • Hold position	Practice Cooperative Learning	• VEXcode V5 • USB Cable (if using a computer) • Various Classroom objects (Ex. eraser, tape, tissue box) • Engineering Notebook	• Prepare for the Remix Challenges-VEXcode V5 Blocks or VEXcode V5 • Remix Challenges-Clawbot Control • Remix Questions-VEXcode V5 Blocks or VEXcode V5 • Event-Based Programming: Communication Among Instructions • Prepare for the Remix Challenges-VEXcode V5 Blocks or VEXcode V5 • Remix Questions-VEXcode V5 Blocks and VEXcode V5 • Collaboration Rubric • Engineering Notebook Rubric (Team Projects)
Know	Review: 5 mins	• Summative	Cooperative Learning	• Multiple Choice Questions	Know Questions (Blocks)

		Assessment			Know Question Answer Key (Blocks) Know Questions (C++) Know Question Answer Key (C++) Know Questions (Python) Know Question Answer Key (Python)