

# Tetrix Prime Curriculum

## Step1: Starting Out!

Tetrix provides many resources including complete manuals that tell you how to build various robots. The following video resources will help you to become familiar with the Tetrix building system before starting to build yourself!

1. [Pairing your Controller with the Receiver](#)
2. [Using Prime Brackets](#)
3. [Building the Prime Wheelee Bot](#)
4. [Assembling the Prime Gripper](#)

## Step 2: Building out of the Manual

Your challenge is to start out by choosing one of the Tetrix Prime robots from the manual and build it. If you are missing any of the components that the manual says you'll need, you will have to use your creativity to find another way to build it!

Once you've built one of the stock robots, pair it with your controller, and learn how to drive it!

## Step 3: Custom Robot Challenges!

Now that you've familiarized yourself with the Tetrix Prime building platform, it's time to put your skills to the test and build a custom robot for various challenges!

### Challenge #1: Fill the Bowl

Find small objects that you have laying around the house such as ping pong balls, and other small plastic items that are all around the same size. Place all of those items in a small pile in an open flat space. You will also need to find a bowl that you will place around 10 feet away from the pile of objects.

Your objective is to build a robot to grab objects from the pile and bring them to the bowl as quickly as possible. You will have 3 minutes to grab as many items as possible and deposit them in the bowl. Your robot can be shaped in any way you can imagine! Take inspiration from the robots in the manuals.

Keep in mind that there are many ways to complete this challenge... you can choose to hold many objects at a time and make fewer trips, or you could build a much faster drivetrain so that each trip takes less time. Experiment and find what the best method is!

0 Objects: You have some work to do!

3 Objects: You're getting there

7 Objects: Nice Robot

12 Objects: Great Robot!

16+ Objects: Wow you're a master!

## **Challenge #2: Drag Racing**

Before you take your "Fill the Bowl" robot apart, use it as a baseline to set a time for your Drag Racing Challenge!

To set up this challenge, you'll need an open, flat space. You'll want to set up a starting line and finish line at least 10 feet apart from each other, further is better. You'll start by using your "Fill the Bowl" robot and doing a

test run to see how long it takes. Record that time by writing it down somewhere.

Your goal is to build a drag racing robot that is faster than your Fill the Bowl robot. Remember that drag racers can be improved by reducing their weight, and increasing their gear ratio! For some ideas about how the gear ratio can impact the speed, check out the videos below.

[Gear Ratio Video 1](#)

[Gear Ratio video 2](#)

### **Challenge #3: Obstacle Race**

Using the techniques you developed during the previous two challenges, figure out how to build a robot that can traverse obstacles quickly, and pick up objects.

For this challenge you will need to set up an obstacle course using stacks of books, cardboard boxes, stools/chairs, and other objects you have laying around your house. Set up the obstacle course in a flat, open area in your house. Define a path around the obstacle course that you will follow every time, and place an object in the middle of the obstacle course that you will need to pick up, and bring back to the starting line as you finish the rest of the obstacle course.

Your objective is to build a robot that can make it through the obstacle course as quickly as possible... but there's a twist! The goal of this challenge is to improve upon your robot to beat your previous times. This challenge will test your ability to iterate and improve upon a design. Make changes such as making your robot lighter, making your object grabbing mechanism quicker, or changing the gear ratio on your drivetrain.

*Beat your best time zero times: You can do better than that!*

*Beat your best time once:* Good job on improving, but you can go faster!

*Beat your best time twice:* Great job, you're becoming a good engineer!

*Beat your best time three or more times:* You're an engineering champion!

## **Other Challenges:**

[Stair Climber Challenge](#)

[Relay Race Challenge](#)

If you finish all of the content above, contact

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