

NRG Fall 2021

Notes for Returning Students

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Resources

Arduino Programming App:

<https://www.arduino.cc/en/Main/Software>

If you would like to program your Arduino on your own PC or Mac at home, you can download the software (called the IDE or Integrated Development Environment) from the link above.

Code Red NRG Resources:

<https://coderedrobotics.com/nrg/nrg-resources/>

This page contains links to Code Red's NRG Game Manual and Arduino programs used to drive the robots in competition. Check back for recent updates!

Getting Started Guide for Arduino UNO:

<https://www.arduino.cc/en/Guide/ArduinoUno>

Your robot uses an Arduino single-board computer as its "brain." This link explains how you can explore using the Arduino for other projects besides using it for a robot.

Week 1 - Sep. 14

- What is a Robot?
- Arduino IDE Sketch Loading
- Block Programming Overview
 - Make it move
 - How fast can you go?
 - How slow can you go?
 - How straight can you go?
- Obstacle Course Challenge Introduction

Week 2 - Sep. 21

- Ultrasonic Sensors and Line Following
- Programming Challenge: Adaptive Cruise Control
- Obstacle Course Review
- Reload competition Sketch, Tournament practice.

Week 3 & 4, Sept. 28 & Oct 5

- Obstacle Course Programming
- Reload competition Sketch, Tournament practice.
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Week 5, Oct. 12

- **Obstacle Course Mini Tournament**
 - Reload competition Sketch, Tournament practice.
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Arduino IDE Sketch Loading

1. Open "**Arduino**" program on PC.
2. **File** → **Open** →
 - a. Open **Documents\Arduino** folder.
 - b. Open the desired Sketch folder.
 - c. Double-click to open the desired sketch .ino file
3. Power off robot.
4. **Remove Bluetooth Module**
5. Connect blue USB cable to Robot USB port and to PC USB port.
6. **Tools** → **Board** should be "Arduino UNO"
7. **Tools** → **Port** select the COM port that indicates it is connected to an Uno.
8. **Sketch** → **Upload**
9. Wait for **Upload Done** message in lower right.
10. Disconnect USB from robot.
11. Plug-in Bluetooth module.
12. Power on the robot.
13. GO!!