

Summer STEM 2022 || Robotics Crash Course

- Morning Lecture Topic
 - Afternoon activity

Week 1

- Electronics Theory
 - Robot Assembly Physical
- C++ and Arduino Basics
 - Robot Assembly Electrical and Software & Coding Challenges 0-2
- Logical/Functional Block Diagrams
 - Diagrams Activity (Finish Robot assembly if needed)
- C++ Part 2
 - Coding Challenges

Week 2

- Implementing Block Diagram into Useable Code
 - Finish implementing algorithm
- Sensors and Actuators Lecture
 - Coding Challenges
- State Transition Diagram Introduction
 - Make your own algorithm with a sensor reading as a conditional
- Finish State Transition Implementation
 - Finish State Transition Implementation

Week 3

- OS Environments, Python Virtual Environment
 - Shell and Python Challenges
- Calculus (Differentiation, Integration), Vectors, Linear Motion
 - Python Challenges
- Physics (Newtons Laws, Forces), Springs
 - Python Challenges
- Rotational Physics
 - Finish Challenges from the week

Week 4

- Systems, Modelling rotation of robot
 - C++ Challenges
- Intro to Controls
 - C++ Challenges
- Controls Theory Continued
 - C++ Challenges
- PID Controls Implementation
 - Finish Challenges from week

Week 5 & 6

- Final Project Working Time

Final Presentations August 18th