

REC Semester 2 Outline

REC Unit 7: Introduction to Electronics

- 7.1 (Core): Fundamentals of Electricity
- 7.2 (Core): Components and Schematics
- 7.3 (Activity): Schematics and Breadboards
- 7.4 (Core): Ohm's Law and Making Measurements
- 7.5 (Activity): Using a Multimeter and Ohm's Law
- 7.6 (Core): Circuits
- 7.7 (Activity): Series and Parallel Circuits
- 7.8 (Core): Feedback
- 7.9 (Activity): Blinking LED
- 7.10 (Core): Working With easyC and Sensors
- 7.11 (Activity): Integrating Hardware and Software
- 7.12 Final Project

REC Unit 8: Mechanical Properties

- 8.1 (Core): Safety and Best Practices
- 8.2 (Core): Chain and Sprockets
- 8.3 (Activity): Testing Chain and Sprockets
- 8.4 (Core): Locomotion Systems
- 8.5 (Activity): Building the Tumblebot
- 8.6 (Core): My Robot Features
- 8.7 (Activity): Program the Tumblebot Drivetrain
- 8.8 (Core): Using the easyC PRO C-Editor
- 8.9 (Activity): Writing an Arcade Function
- 8.10 (Core): Advanced easyC PRO Functions
- 8.11 (Activity): Introduction to Freeze Tag
- 8.12 (Core): Adding Autonomous Control
- 8.13 (Project): Freeze Tag

REC Unit 9: Advanced C Programming

- 9.1 (Core): Proportional Control
- 9.2 (Activity): Using Proportional Control
- 9.3 (Core): Derivative Control
- 9.4 (Activity): Using Derivative Control
- 9.5 (Core): PID Control
- 9.6 (Activity): Integral Control
- 9.7 (Core): Data Filtering

- 9.8 (Activity): Data Filtering and Graceful Degradation
- 9.9 (Core): Behavioral Robotics
- 9.10 (Activity): Build a Vacuuming Robot
- 9.11 (Core): Organizing Behaviors
- 9.12 (Activity): Writing a Roombot Behavior
- 9.13 (Core): Random Turns
- 9.14 (Activity): Generating Random Numbers
- 9.15 (Project): Roombot Field Navigator

REC Unit 10: Industrial Robotic Arms

- 10.1 (Core): Industrial Robots
- 10.2 (Activity): Building a Turret
- 10.3 (Core): Potentiometers
- 10.4 (Activity): Installing the Potentiometer
- 10.5 (Core): Robotic Movement
- 10.6 (Activity): Completing the Arm
- 10.7 (Core): Robotic Integration
- 10.8 (Project) Pass the Workpiece

REC Unit 11: Advanced Mechanics

- 11.1 (Core): Lift Systems
- 11.2 (Activity): Building a Lift Mechanism
- 11.3 (Core): Advanced Gear Systems
- 11.4 (Activity): Rack and Pinion Test Stand
- 11.5 (Core): Roller and Conveyors

REC Unit 12: Second Semester Project

- 12.1 (Project): Bucket Battle

This is two-week project that reinforces all the materials covered in Units 7-11.