

# Exploratory Design & Engineering II

## Curriculum at a Glance Estimated Time Allocations

1 Week	<b>Introduction to class. Policies and procedures.</b> <b>How to draw and read schematics associated with electronics</b> <b>Review of basic drafting skills associated with new symbols</b> <b>How to use a bread board – 1 day</b> <b>Lesson #1 - Resistor Color Code – 2 days</b>	Recommended at beginning of course
1 Week	<b>Lesson #2 - OHM' law and the basic electronic circuit – 2 days</b> <b>Lesson #3 - Parallel Circuit – 2 days</b> <b>Lesson #4 - Diode Action – 1 day</b>	
1 Week	Lesson #5 - Light Emitting Diodes – 1 day Lesson #6 - Electromagnetism – 2 days Lesson #7 - Capacitance – 2 days	These lessons can occur in any order that makes sense for your schedule. For instance, if the class is running 1 <sup>st</sup> semester you may want to move the Solar Unit to the third week of school.
1 Week	Lesson #8 - Transistor Switch – 2 days Lesson #9 - Variable Resistor LED Dimmer – 2 days	
1 Week	Lesson #10 - DC Motor Experiment – 2 days Lesson #11 - Transistor Oscillator – 2 days	
2 Weeks	Students choose 6 circuits past Lesson #11 to build on their own.	
2 Weeks	Battery Unit <ul style="list-style-type: none"> <li>• Timeline – 2 days</li> <li>• Presentation – 3 days</li> <li>• Lemon Project – 2 days</li> <li>• Potato Project – 2 days</li> </ul>	
2 Weeks	Motor Unit <ul style="list-style-type: none"> <li>• Introductory PowerPoint with activities – 2 or 3 days</li> <li>• Teacher Demo-simple motor – 1 day</li> <li>• Advanced Stationary Motor – 4 days</li> <li>• Wind Turbine – 3 days</li> </ul>	
2 Weeks	Solar Unit <ul style="list-style-type: none"> <li>• Introductory PowerPoint with activity – 1 day</li> <li>• Ice Cube Meltdown – 1 day</li> <li>• Funnel the Sun – 2 days</li> <li>• Shoebox Water Heater – 3 days</li> <li>• Invention/Innovation Presentation – 3 days</li> </ul>	
5 Weeks	<b>Capstone Project Electric Vehicle</b> <ul style="list-style-type: none"> <li>• <b>Design vehicle &amp; begin material list</b></li> <li>• <b>Complete design &amp; procure materials</b></li> <li>• <b>Build and test vehicle</b></li> <li>• <b>Build and test vehicle / begin report</b></li> <li>• <b>Complete challenges, class presentations and showcase</b></li> </ul>	Recommended to stay at end.

The timeline above accounts for 18 weeks out of the semester. This leaves some room for individualization, school closings, and district scheduled testing.