RAMPED – Summer 2016 **Basic Electricity and Arduinos**
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P = Pretest (think essential questions)
O = Objectives (measurable - see Bloom's taxonomy)
C = Catch (hook, anticipatory set, etc... use different senses, not a question)
A = Activity (procedure of what the students should do)
R = Review (how will students go over what they've learned?)
A = Assessment (formative and/or summative)
P = Posttest (same as pretest for comparison purposes)
S = Standards (Wyoming, NGSS, etc...) showcasing crosscutting concepts[1]

Pretest Questions	Pre-Test on Quizlet: https://quizlet.com/_2e4r8s Basic Electricity Test: http://www.avotraining.com/resources/test-your-knowledge/basic-electricity-assessment-test/
Objectives	Understand Micro controllers (Arduinos) basic electricity and components. Build circuits through Arduinos
Catch	Watch Video on Electricty- Bill Nye the Science Guy (6.49 minutes) https://www.youtube.com/watch?v=gixkpsrxk4Y
Activity	[Download the Arduino onto student computers prior to lesson] www.Arduino.cc Electricity Vocabulary- Crossword Puzzle [see attached] OHM's law and Current Worksheet Build Simple Circuits (LED) Use Arduinos kitSimple LED Circuit Using a Breadboard Using Arduino Programming code- Show slideshow from Dr. Kubichek slides from **Ramped Day 1 a.m**. 41-49 -Guide students to work along with the slides Simple Arduino lessons: http://www.makeuseof.com/tag/10-great-arduino-projects-for-beginners/

[1] http://ngss.nsta.org/CrosscuttingConceptsFull.aspx

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Review	Students will work with a partner and use the resources, videos, peers and hands-on experience to build an arduino circuit.
Assessments	Students will create an electric circuit using the following components: Breadboard, Arduino, power source, LED, resistor, jumper wires, downloaded code, one other component such as a button, pentiometer, etc
Posttest Questions (same as pretest questions)	Post-Test
Standards	**Standards: All CTE Standards 1-5 are being utilized.** **Career Development and Readiness:** Students demonstrate career planning and employability skills. **Communication and Collaboration:** Students develop the skills necessary to effectively lead, collaborate, and communicate. **Critical Thinking and Problem Solving:** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate technology, tools, and resources **Technical Literacy**: Students effectively read, evaluate, write, and communicate technical information. **Technical Proficiency and Productivity:** Students safely, ethically, and productively use existing and new technologies and systems. Additional Math, reading and science standards are also being used. **ISTE Standards:** 1. Creativity and Innovation 4. Critical Thinking, Problem Solving and Decision Making
Crosscutting Concepts from NGSS	K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

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