**Make It at the Library 2015 – Workshop Homework Assignments**

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**Revision Date:** 02/01/2015

1) **Electrical components**
      i) LED
      ii) Resistor
      iii) Capacitor
      iv) Transistor
      v) Diode
      vi) Integrated circuit
      vii) Inductor
      viii) Ohms Law
   b) Voltage and current explanation 1: [https://www.youtube.com/watch?v=LYZUXV-v71Y](https://www.youtube.com/watch?v=LYZUXV-v71Y)
   c) Voltage and current explanation 2: [https://www.youtube.com/watch?v=zYS9kd56tI8](https://www.youtube.com/watch?v=zYS9kd56tI8)
   d) Does voltage or current kill you: [https://www.youtube.com/watch?v=9iK7vuq-rY](https://www.youtube.com/watch?v=9iK7vuq-rY)
   e) AC and DC power: [https://www.youtube.com/watch?v=vN9aR2wKv0U](https://www.youtube.com/watch?v=vN9aR2wKv0U)

2) **Breadboarding**
   a) What is breadboarding: [https://makezineblog.files.wordpress.com/2012/10/breadboardworkshop.pdf](https://makezineblog.files.wordpress.com/2012/10/breadboardworkshop.pdf)
   b) Introduction to Breadboarding Part 1 of 2: [https://www.youtube.com/watch?v=oigNasPTI7w](https://www.youtube.com/watch?v=oigNasPTI7w)
   c) Introduction to Breadboarding Part 2 of 2: [https://www.youtube.com/watch?v=Mq9XMNsoAd8](https://www.youtube.com/watch?v=Mq9XMNsoAd8)
   d) Sparkfun How to use a breadboard: [https://learn.sparkfun.com/tutorials/how-to-use-a-breadboard](https://learn.sparkfun.com/tutorials/how-to-use-a-breadboard)
   e) Collin’s Lab: The real breadboard [https://www.youtube.com/watch?v=HrG98HJ3Z6w](https://www.youtube.com/watch?v=HrG98HJ3Z6w)

3) **Reading Circuit Diagrams**

4) **Sensors and Motors**

b) Adafruit force sensor: https://learn.adafruit.com/force-sensitive-resistor-fsr


5) Arduino

a) Introduction to Arduino: http://makezine.com/2012/06/18/an-introduction-to-the-arduino/

b) Adafruit Arduino Tutorials: https://learn.adafruit.com/series/learn-arduino


ii) Lesson 1 – Blink LED: https://learn.adafruit.com/adafruit-arduino-lesson-1-blink

iii) Lesson 2 – RGB LED: https://learn.adafruit.com/adafruit-arduino-lesson-3-rgb-leds


c) (Video) Arduino Video 01 – Jeremey Blum: https://www.youtube.com/watch?v=fCxzA9_kg6s

d) (Video) Arduino Video 02 – Jeremey Blum: https://www.youtube.com/watch?v=_LCCGFSMO4


f) Arduino plant monitor: http://makezine.com/2014/05/02/monitor-the-health-vitality-of-your-home-garden-with-weekend-projects/

g) Arduino touch sensors: https://www.youtube.com/watch?v=yl4EtBgMOxc

6) Wearables and E-textiles

a) Adafruit Gemma Introduction: https://learn.adafruit.com/introducing-gemma/introduction

b) Adafruit wearable sensors: https://learn.adafruit.com/flora-sensors

c) Adafruit Plush Game Controller: https://learn.adafruit.com/plush-game-controller/overview


f) Adafruit Stitching circuits: https://learn.adafruit.com/conductive-thread/stitching-around-circuit-boards

g) Adafruit Light Up Fish: https://learn.adafruit.com/light-up-angler-fish-embroidery

h) Beatband sleeve: http://makezine.com/projects/beatband-sleeve/

i) Beating heart headband: https://www.youtube.com/watch?v=gbUVZIPi9aLo&feature=youtu.be&list=PLC3A0E18A403665FE
7) Extra-credit
   a) Latest and greatest microcontrollers and boards: http://makezine.com/magazine/make-43/a-smorgas-board-for-your-computing-pleasure/
   b) Body boards – more wearable microcontrollers: http://makezine.com/magazine/make-43/body-boards/
   c) Adafruit Lipo batteries: https://learn.adafruit.com/li-ion-and-lipoly-batteries
   d) Adafruit Motors: https://learn.adafruit.com/adafruit-motor-selection-guide/powering-your-motors
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