**Short Bio**

Kheng Meng is an enthusiastic maker in the areas of electronics, embedded programming and hardware in general. He graduated from the National University of Singapore with a Bachelor of Computer Science in 2015 but found his interest in hardware in his later years in University.

He is currently working in Algo Access, a local med-tech hardware startup providing solutions to eye-care professionals. Prior to this, he worked in Innova Technology making Bluetooth anti-loss tags. He has strong working knowledge in the area of Bluetooth Low Energy should anyone be interested.

Outside of work, he is a regular volunteer at Repair Kopitiam, a group started to spread the repair culture in Singapore.

He is exceptionally proud of his PCB business card, details which can be found here. <http://yeokhengmeng.com/2015/09/pcb-businessname-card/>

**Classname:**

Introduction to PCB Design

**Type of class:**

Introductory class

**About the class:**

You will be learning the process behind designing a Printed Circuit Board (PCB) as well as how to send for small quantity manufacturing. Stencil soldering with the help of a reflow oven will be taught to help speed up surface-mount soldering.

This class is targeted at makers who wish to take their electronics projects one step above the bare prototyping stage with such as the following requirements

1. Reduce the physical size of your projects

2. Small quantity manufacturing

3. Increase durability of your projects

**Learning objectives:**

Electronics Terminology associated with PCB

Short evaluation of common PCB Electronic Design Automation (EDA) Software

Design process of a PCB

Design a PCB using Eagle

How to use existing Eagle Libraries

Best practices when designing a PCB

How to send PCB for small scale (<50) production

Soldering without a soldering station! How to use a stencil and reflow oven.

**Takeaways of the class:**

You will get to design a simple blinker circuit. Since PCB fabrication takes weeks, you will get a prefabricated board to solder the parts with some help of the reflow oven. The complete board can be taken home by the student.

If time permits, students can design a custom PCB of their choice with the evaluation of the instructors present. Quality of the final product cannot be guaranteed. The cost and logistics of producing the custom PCB will be borne by the student.

**Duration**

3 hours. May change depends on how my trial class pans out.

**Age Range**

16 and above

**Prerequisites**

Rudimentary electronics knowledge. Students should already be familiar with prototyping basic electronic components on the breadboard.

**Material cost**

30

**List of materials and tools included in material cost:**

Fabricated PCB. Parts to be soldered onto PCB. Coin cell batteries will be provided.

**Materials or Hardware that Student needs to bring not included in material cost:**

Reasonably modern laptop installed with the latest free version of Eagle 7.5 or above. <http://www.cadsoftusa.com/download-eagle/>

**Tools and Machines or Hardware required from OMG \***

Projector, Infrared IC heater, soldering station. Extra laptops preinstalled with Eagle in case some students always forget to bring their laptops.

Solder paste. (Not the ones in the white can, the ones for reflow oven) I can bring this as I know OMG does not have this.

**Max students**

3 students without assistants. More students subject to a max ratio of 1 assistant to 2 extra students. Of course, I hope to get 1-1 ratio.

**Social Media**

https://www.facebook.com/yeokhengmeng

https://github.com/yeokm1

http://yeokhengmeng.com/