

# IEEE NORTHERN VIRGINIA SECTION HANDS-ON WORKSHOP

## Build an Internet of Things Weather Station

**Course # 557777**

### Agenda

October 29, 2016

Time	Topic	Instructor
9:00 am	Introductions and Logistics	Marty
9:10 am	The Internet of Things	Karl
9:15 am	Software Development Overview	Marty
9:45 am	Sketch 1: Blink	Karl
10:45 am	Choosing an MCU	Marty
11:00 am	Sketch 2: Hello World	Karl
11:30 am	Internet Protocols	Marty
11:45 am	Lunch	
12:45 pm	Sketch 3: Standalone Weather Station	Karl
1:15 pm	IoT Architecture	Marty
1:35 pm	Sketch 4: IoT Weather Station	Karl
2:35 pm	Sketch 5: Smartphone App (if time is available)	Karl
2:50 pm	Closing Comments	All

This schedule is subject to change.

**Course Materials:** <http://w4krl.com/projects/ieee-iot/2016october>

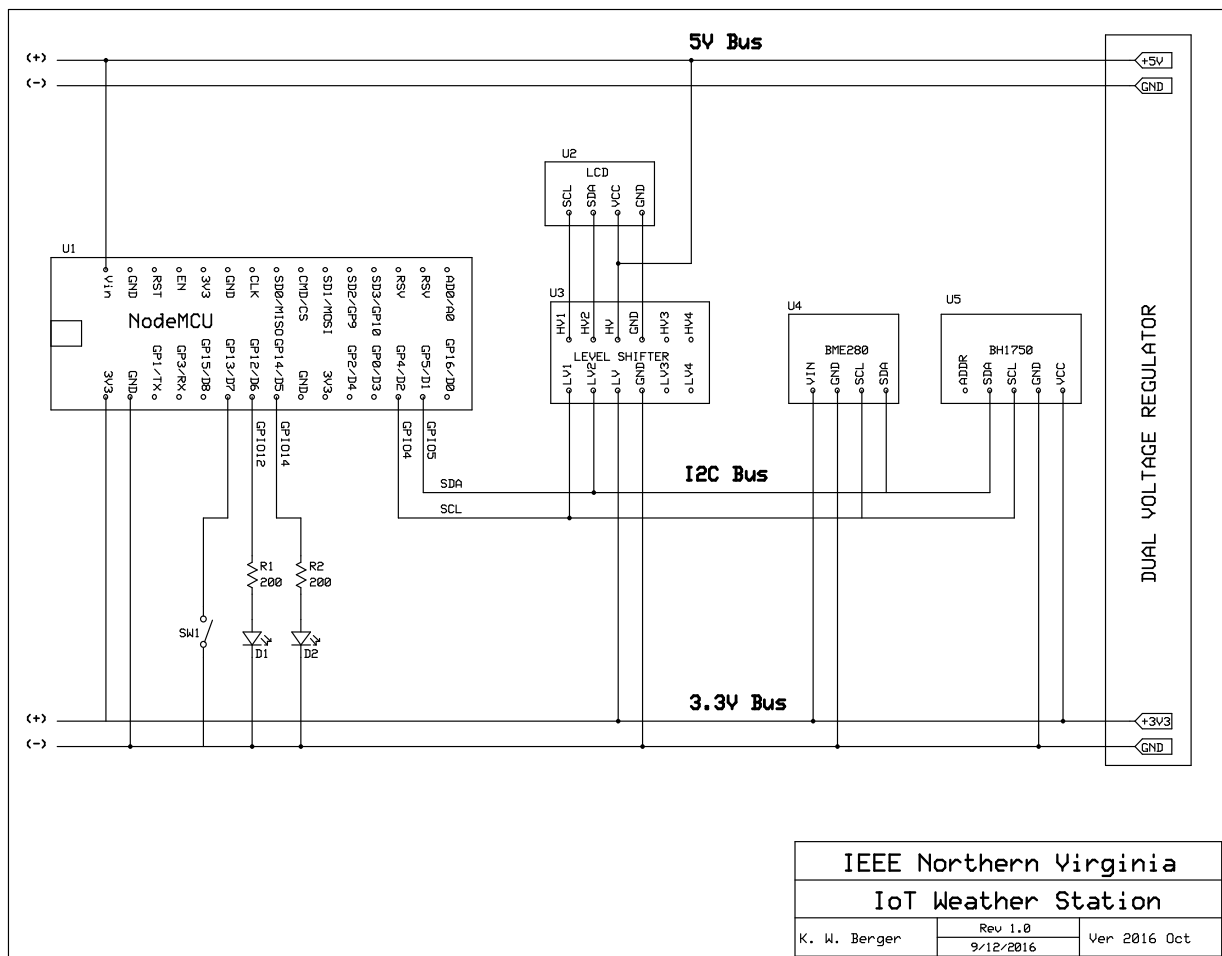
Instructor's email: [karl.berger.pe@ieee.org](mailto:karl.berger.pe@ieee.org)

IEEE Northern VA Section: <http://sites.ieee.org/nova/>

IEEE Washington Section: <http://sites.ieee.org/washington/>

# IEEE NORTHERN VIRGINIA SECTION HANDS-ON WORKSHOP

<b>WiFi</b>		
SSID: MCPA	Password: "" [blank]	
<b>Course Materials: <a href="http://w4krl.com/projects/ieee-iot/2016october">http://w4krl.com/projects/ieee-iot/2016october</a></b>		
<b>ThingSpeak: <a href="http://www.thingspeak.com">www.thingspeak.com</a></b>		
UserID:	Password:	ChannelID:
API Read:		API Write:
<b>Blynk: <a href="http://www.blynk.cc">www.blynk.cc</a></b>		
UserID:	Password:	
Auth Token:		



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## LCD Template

lcd.setCursor(column, row);

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0																
1																

## Resource Links

Course Notes: <http://w4krl.com/projects/ieee-iot/2016october>

Arduino IDE software & reference: [www.arduino.cc](http://www.arduino.cc)

ESP8266 Arduino Core: <https://github.com/esp8266/Arduino>

ESP8266 Community Forum: [www.esp8266.com/arduino](http://www.esp8266.com/arduino)

ThingSpeak: [www.thingspeak.com](http://www.thingspeak.com)

MATLAB: [www.mathworks.com/help/thingspeak/](http://www.mathworks.com/help/thingspeak/)

Google Charts: <https://developers.google.com/chart/>

Blynk: [www.blynk.cc](http://www.blynk.cc)

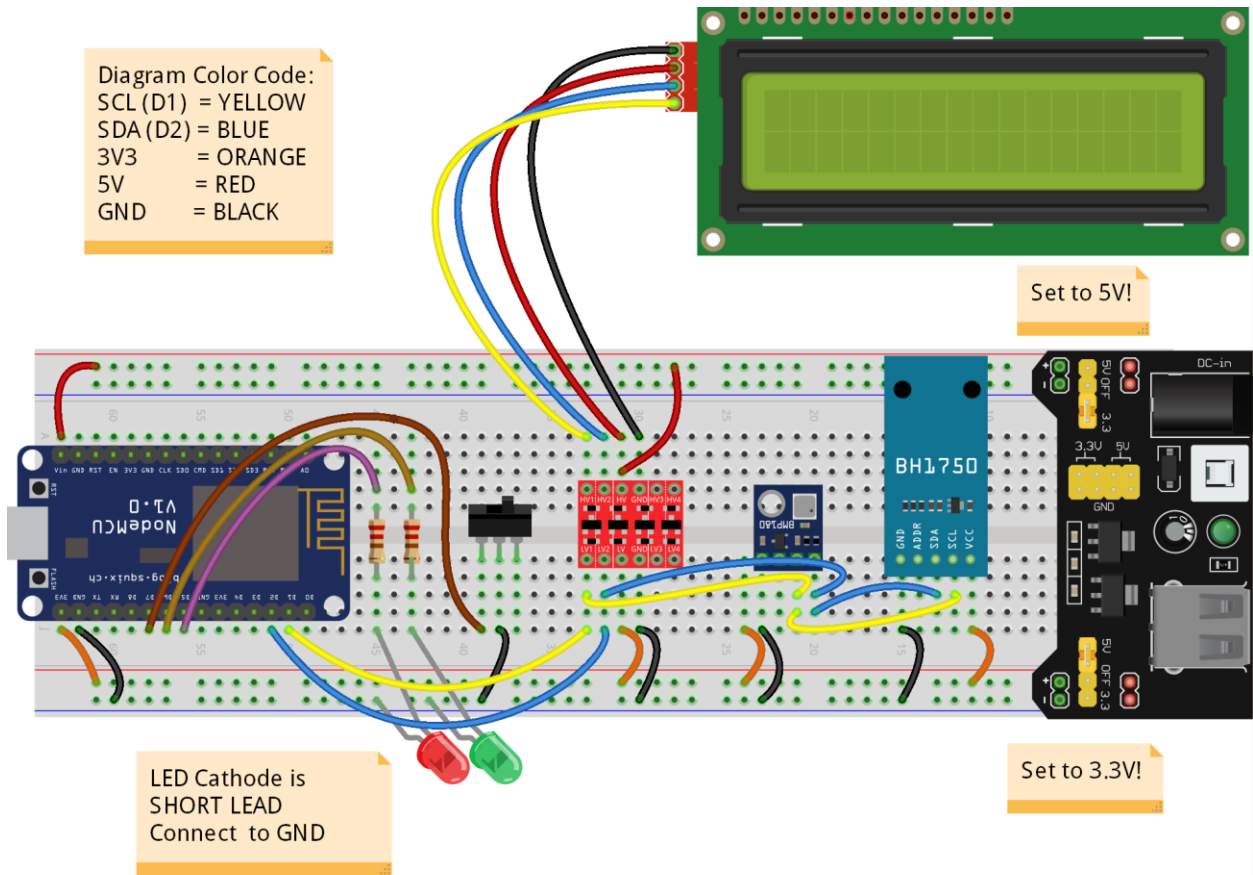
C++ Tutorial: <http://www.cplusplus.com/doc/tutorial/>

Parts & supplies: [www.taydaelectronics.com](http://www.taydaelectronics.com), [www.banggood.com](http://www.banggood.com)  
[www.ebay.com](http://www.ebay.com) (multiple vendors)  
[www.microcenter.com](http://www.microcenter.com) [3089 Nutley St., Fairfax, VA 22031]

## Parts List

1. NodeMCU v1.0
2. LCD 1602 with I2C adapter (16 characters, 2 lines)
3. Solderless Breadboard MB-102, 830-points
4. Dual Voltage Regulator, 5V/3.3V breadboard format
5. DuPont Jumpers Male-Male, 120mm (30+ quantity)
6. DuPont Jumper Cable, 4-conductor, Male-Female, 200mm (taken from 40-conductor ribbon)
7. Power Supply 12Vdc, 1A, 5.5mm/2.1mm center positive
8. Micro-USB cable, 1m
9. BME280 barometric pressure/temperature/humidity, 3.3V breakout module
10. BH1750 light intensity sensor, 3.3V breakout module
11. Level converter, 4-channel, bi-directional
12. LEDs (2)
13. 200-Ohm resistors (2)
14. SPDT switch

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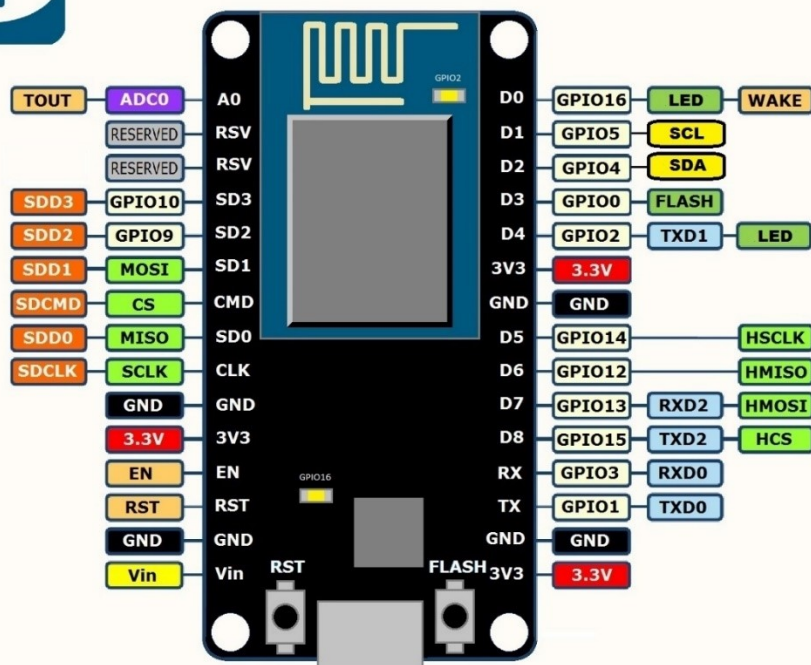


fritzing



## NodeMCU ESP-12 development kit V1.0

### PIN DEFINITION



Arduining.com