# **DIY weather station** 3

# With **Arduino UNO**, **DHT11 sensor**, and a **NFP1315 (SSD1306)** OLED

**⚡ Components Needed**

* **Arduino UNO**
* **DHT11 temperature & humidity sensor**
* **OLED display (NFP1315/SSD1306, typically 128x64 or 128x32)**
* **Breadboard and jumper wires**
* **USB cable**
* **Arduino IDE (software)**

## 🔌 Circuit Connections

**DHT11 Connections:**

* **VCC** → 5V on Arduino UNO
* **GND** → GND on Arduino UNO
* **Data** → Digital pin 2 on Arduino UNO

**OLED Display (typically 4-pin I2C):**

* **VCC** → 3.3V or 5V (check your display specification)
* **GND** → GND
* **SCL** → A5 (Arduino UNO I2C Clock)
* **SDA** → A4 (Arduino UNO I2C Data)

## 💾 Arduino IDE Setup

1. **Install Required Libraries:**
   * Open Arduino IDE
   * Go to Sketch > Include Library > Manage Libraries
   * Search for and install:
     + **Adafruit Unified Sensor**
     + **DHT sensor library by Adafruit**
     + **Adafruit SSD1306**
     + **Adafruit GFX Library**
2. **Code:**

cpp

#**include** <Adafruit\_SSD1306.h>

#**include** <Adafruit\_GFX.h>

#**include** <Adafruit\_Sensor.h>

#**include** <DHT.h>

#**include** <DHT\_U.h>

*// Define pins*

#**define** DHTPIN 2

#**define** DHTTYPE DHT11

DHT dht(DHTPIN, DHTTYPE);

Adafruit\_SSD1306 display(128, 64, &Wire, -1); *// For 128x32, use (128, 32, ...)*

**void** setup() {

Serial.begin(9600);

dht.begin();

*// Initialize display*

**if**(!display.begin(SSD1306\_SWITCHCAPVCC, 0x3C)) { *// Address 0x3C typical*

Serial.println(F("SSD1306 allocation failed"));

**for**(;;); *// Halt*

}

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(SSD1306\_WHITE);

}

**void** loop() {

**float** h = dht.readHumidity();

**float** t = dht.readTemperature();

display.clearDisplay();

display.setCursor(0, 0);

display.print("Temp: ");

**if** (isnan(t)) {

display.print("Err");

} **else** {

display.print(t);

display.print(" C");

}

display.setCursor(0, 16);

display.print("Humidity: ");

**if** (isnan(h)) {

display.print("Err");

} **else** {

display.print(h);

display.print(" %");

}

display.display();

delay(2000);

}

* Adjust display(128, 64, &Wire, -1) to display(128, 32, &Wire, -1) if using a 32-pixel tall display (refer to NFP1315 specifics).

## Steps Summary

1. **Wire the components** as described above.
2. **Open Arduino IDE, install required libraries, and paste the code**.
3. **Upload the code** to your Arduino UNO.
4. **Observe live temperature and humidity** readings displayed on your OLED screen