1. LAB การทดลองเรื่อง Voltage Sensor (ไม่ได้ใช้ Library)

โค้ดที่นำไปใช้งาน

```
const float alpha = 0.589;

const float beta = 0.8747;

const int pin_v = 34;

void setup() {

  Serial.begin(115200);

}

void loop() {

  float adc_voltage = analogRead(pin_v);

  float voltage = ((adc_voltage * 3.3) / (float)(1 << 9));

  float calibrated_voltage = (alpha * voltage) + beta;

  Serial.print("ADC_v value : ");

  Serial.print(adc_voltage, 2);

  Serial.print(" | Voltage : ");

  Serial.print(voltage, 3);

  Serial.print(" | Voltage Calibrated : ");

  Serial.print(calibrated_voltage);

  Serial.println(" V");

  delay(1000);

}
```

2.การทดลองเรื่อง Current Sensor: ACS712 (ไม่ได้ใช้ Library)

```
#include <math.h>

#define CURRENT_SENSOR_PIN 35

#define SAMPLE_SIZE 100

const float alpha_poly = -0.7583;

const float beta_poly = 2.2562;

const float gamma_poly = -0.0299;
```

```
void setup() {
  Serial.begin(9600);
  pinMode(CURRENT_SENSOR_PIN, INPUT);
}
void loop() {
  long sum_adc = 0;
  for (int i = 0; i < SAMPLE_SIZE; i++) {
    sum_adc += analogRead(CURRENT_SENSOR_PIN);
    delayMicroseconds(50);
  }
  float average_adc = (float)sum_adc / SAMPLE_SIZE;
  Serial.print("Average ADC : ");
  Serial.println(average_adc);
  float voltage = (average_adc / 4095.0) * 3.30;
  float set_zero_voltage = voltage - 1.525;
  float current_sensor = set_zero_voltage / 0.185;
  float polynomial_calibration = (alpha_poly * current_sensor * current_sensor) + (beta_poly * current_sensor) +
gamma_poly;
  Serial.print("Current sensor (before cal): ");
  Serial.println(current_sensor, 3);
  Serial.print("Calibrated Polynomial Current Sensor: ");
  Serial.println(polynomial_calibration, 3);
  Serial.println("-----------------------------------------");

  delay(700);
}
```