### American International University- Bangladesh

### Department of Electrical and Electronic Engineering

EEE4103: Microprocessor and /Embedded Systems Laboratory

***Title:*** Students will provide an appropriate title to a microcontroller based self-designed laboratory experiment based on ideas and knowledge they acquired from their previous laboratory experiments.

***Objective:*** Students can design an embedded system that will sense some parameters from their surroundings and using those parameters their system will provide security to human life/ Treasury. Students will be completing their lab experiment by verifying program for their experiment using a relevant software development tool then implement their experiment in trainer board as hardware to observe their results. Time duration for this whole lab experiment will be 60 minutes per group. This overall lab experiment will be done group-wise including 5 members per group, one member who has not submitted any lab report from his group in final term will be completing a lab report based on this experiment, all the groupmates will be helping the groupmate to complete the lab report. The lab report must be submitted on the final lab exam week within lab class duration. Students will not be allowed to see lab manuals or collect experiment ideas using the internet, they will not be allowed to have access to their cellphones during this lab experiment.

***Theory and Methodology:*** Students will be explaining their experiment methodology in this section which will be brief. They may produce a circuit diagram by pen to explain the overall system of their lab experiment and label the circuit diagram.

***Apparatus:*** The students can select apparatus from below table only to create their experiment according to their requirements:

|  |  |  |
| --- | --- | --- |
| * Arduino UNO * Arduino Mega * Resistors * LED indicators | * Ultrasonic sensor * OLED display * Pressure sensor * Breadboard * Raspberry PI | * Jumper wires * Potentiometer * Dc motor * H-bridge motor driver |

***Simulation Setup:*** Students will be adding pictures of their implemented hardware circuit connection in this section.

***Coding Program:*** Students will be adding the program they wrote for hardware implementation in this section.

***Data collection table / comparison table based after results:*** The students will be including their collected results and make a data table for analysis.

***Discussions:*** Students will be writing reasonable conclusions here related to their experiment.