### 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 utilizing a simulation software named Proteus to implement software simulation and implement their simulated experiment in trainer board as hardware to compare their results. This overall lab experiment will be done group-wise including eight group members, three members will be responsible for software simulation, another three members for hardware implementation and remaining two members will be completing this lab report. Time duration for this whole lab experiment will be 40 minutes per group.

***Theory and Methodology:*** Students will be explaining their experiment methodology in this section which will be in 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 to create their experiment according to their requirements:

|  |  |  |
| --- | --- | --- |
| * Arduino UNO * Arduino Mega * Resistors * LED indicators | * Temperature & Humidity sensor * Ultrasonic sensor * LCD display * Seven segment display | * Jumper wires * Potentiometer * Dc motors * Raspberry PI * Breadboard |

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

***Schematic diagram:*** Students will be adding schematic diagram from Proteus simulation in this section.

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

***Flowchart:*** Students will be adding flowchart from visual designer section of Proteus simulation 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.