### 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:*** A microcontroller based project should be developed that can measure certain parameters or monitor a process or control a system. The measurement and monitoring system should be designed in such a manner so that it can ensure autonomous functionality. Hence, the system will provide an alarm if the parameter(s) of interest is/are above or below the margin. Likewise, the monitoring system should also provide an indication when the process experiences a malfunction. In the case of a control system, it should perform the task autonomously and send a notification if it experiences any failure. The project must comprise both the hardware and software interface.

***Working Procedure:*** The detail working procedure of the proposed project should be explained in this section along with a schematic or block diagram. The explanation must include the functionality of each component that is used to develop the system.

***Apparatus:*** Name and quantity of each apparatus must be included in this section.

***Simulation Setup:*** This section should illustrate the simulation environment. An extended description of the simulation process has to be highlighted here i.e. the tool that is used to conduct simulation, any specific condition that is applied at any point of the circuit to control the simulation process and comment on input parameters along with the reasoning of choosing certain value etc. The flow-chart and program code should be included here if they are necessary to fulfil the simulation requirements.

***Experimental setup:*** An extensive description of the experimental setup should be depicted here. How the prototype is developed and the process of incorporating different components to build the complete functional device should be mentioned here. The method of the data collection process should be reported here as well.

***Results and Discussion:*** The extracted data from the simulation and experimental study should be compared here and comment should be made according to the analysis. The agreement or discrepancy between the simulation and experimental result has to be presented with proper reasoning.

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