Department of Electrical and Computer Engineering
North South University

Senior Design Project
499A & 499B

Smart Hydroponic System

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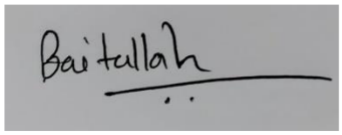
Declaration

It is hereby acknowledged that:

- No illegitimate procedure has been practiced during the preparation of this document.
- This document does not contain any previously published material without proper citation.
- This document represents our own accomplishment while being Undergraduate Students in the North South University.

Sincerely,



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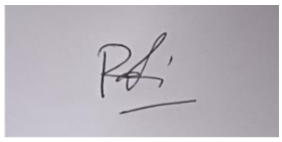

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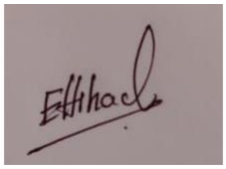

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Approval

I certify that I have read this dissertation and that, in my opinion, it is fully adequate inscope and quality as a dissertation.

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I certify that I have read this dissertation and that, in my opinion, it is fully adequate inscope and quality as a dissertation.

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Abstract

Hydroponic can be defined as growing plants in water containing nutrients. Examples of this type of hydroponic systems includes NFT (nutrient film technique) systems and deep-water float systems where plant roots are set in nutrient solutions. With this definition growing plants in soilless media (potting soil) or other types of aggregate media such as sand, gravel, and coconut coil are considered hydroponic systems. Here, we are using hydroponics to mean growing plants without soil. Essential nutrients can be broadly categorized as macronutrients and micronutrients. Macronutrients and micronutrients are both essential for plant growth and development. Macronutrients include carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, sulfur, calcium, and magnesium. Micronutrients include iron, manganese, zinc, boron, molybdenum, chlorine, copper, and nickel. The difference between macro- and micronutrients is the amount required by plants. Macronutrients are required in higher amounts than micronutrients.