**Research Plan**

Instructions: Using the suggested research activities presented at the end of each lecture, identify at least one activity that you are most interest in and will be involved in upcoming months.

**Faculty Name:** Wenxian Tan and Amanda Masino

**Email:** wtan@htu.edu, ammasino@htu.edu

**Institution:** Huston-Tillotson University

**Title of the Research:** Powering greenhouse monitoring/maintenance protocols with solar energy.

**Will it be a collaborative work with other partners (if yes, name of the partner):** Yes, we will likely collaborate with other RE-ENERGIZE partners for their expertise and experience in designing an automatic irrigation and monitoring system that will measure variables within the HTU greenhouse, including ambient temperature, amount of sunlight received, relative humidity, rainwater levels in collector, etc).

**Objectives of Activity:**

1. Introduce the concept of urban farming to students.
2. Designing a more sustainable agricultural method.
3. Implementing a solar-powered automated irrigation and monitoring system.
4. Collect real-time data about growing conditions that can be used to optimize yield.

**Description of the activity:**

Students will utilize the existing HTU greenhouse for this research project. A solar panel and backup system will be installed to power the automatic irrigation/monitoring system. This aspect will foster an understanding of how solar power can be utilized for agricultural purposes, which can be in isolated locations. The monitoring aspect encourages student observe conditions required for optimal growth and ties into biological concepts of photosynthesis and environmental conditions that promote/adversely affect it.

Once systems are operational, students may experiment with variables to observe possible impacts on growth.

**Possible deliverables/output (a product, software, article, etc.):**

Student presentations/posters, publications, a student-run site providing real-time data from the monitoring systems, results, pictures, etc.

**Expected Students involved:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Email** | **Field of interest** | **Hours/week working** | **Minority?** | **Female Minority?** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |