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# A Computer Controlled Greenhouse System

Jordan Stroup

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# **A Computer Controlled Greenhouse System**

**Submitted by: Jordan Stroup**

**To B.S. Computer Engineering Technology Degree Requirement**

**Monday, April 25, 2011**

**Professors Iskandar Hack, Gary Steffen, and Dr. Suzanne Rumsey**

**Submitted to:**

**Iskandar Hack, Professor of ECET 491 Senior Design II**

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**College of Engineering, Technology, and Computer Science**

**Indiana University-Purdue University Fort Wayne, Indiana**

# A Computer Controlled Greenhouse System

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## **Abstract:**

The purpose of this project was to design a simple and cost effective greenhouse control system for under \$75. Irrigation, lighting, and ventilation were controlled through a 40-pin microprocessor with an in-board oscillator to control the timing of events. Irrigation was closely measured while lighting and ventilation were not as closely regulated. The enclosures constructed maintained one plant each while following a simple scheduling system with simple controls. The total cost of the project was \$73.37 meeting the budgeting and functional goals by maintaining growth environments effectively under the specified cost.

Keywords: PIC, control system, horticulture, agriculture, greenhouse, irrigation

# A Computer Controlled Greenhouse System

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## Chapter 1: Introduction

Stated briefly, I am designing a small greenhouse control system. The system will implement two separate greenhouse enclosures that will each have watering, lighting, and ventilation control. Each control will be mastered by the central device (Programmable Inline Circuit - PIC) and will be monitored by thermistors to control the temperature of each enclosure. Using a timer in the main circuit, the PIC will be able to control watering and timing schedules. The overall goal of this system is to gain the greatest possible functionality on the smallest possible budget.

### Problem:

The problem faced is the extreme cost to greenhouse control systems. Complex systems are marketed at prices in the thousands of dollars. A great number of greenhouses in the nation would benefit from a control system, but most cannot easily spend great sums on such a system. My goal is to create a new product which will enable such businesses to streamline their process and reduce the time needed to care for plants at a sensible cost.