

IPRO-320
THE GREENHOUSE PROJECT
Professor Blake Davis

MIDTERM PROJECT REPORT

March 21, 2004

I. OBJECTIVES

The goal of the IPRO-320 (The Greenhouse Project) team is to evaluate, improve, and utilize The Chicago Center for Green Technology's solar greenhouse. The team will monitor the conditions within the greenhouse and use that information to find ways to improve its efficiency and functionality. In addition to making proposals to the Center for Green Technology, the team will implement some of these ideas. Ultimately, the team will plant and grow seedlings within the greenhouse. The vision for this IPRO group is to make the greenhouse fully functional and efficient.

II. BACKGROUND

The City of Chicago created the Center for Green Technology to demonstrate and promote what they termed "green" technology; it includes a solar cell manufacturing facility and several city offices. The building was rehabilitated to meet LEED standards. LEED is an accrediting program that validates that a building employs "best practices" with regard to sustainable development. As part of the design, the city designed and built a solar greenhouse. Though the greenhouse has been monitored to determine if it met the energy conservation goals, it has never been used to grow plants. Ultimately, the greenhouse, when functional, will be able to aid the surrounding community by providing free plants to its citizens.

III. METHODOLOGY

The IPRO-320 team intends to use the following approach to accomplish its goals:

- 1) Install sensors and a computer that will monitor and collect temperature inside and outside the greenhouse as well as rain data.
- 2) Consult with one of the architects who designed the greenhouse, Roald Gunderson, and use his input to redesign certain sections of the greenhouse.
- 3) Consult with the director of the Center for Green Technology, Aaron Durnbaugh, and use his input to determine what proposals are economically feasible.
- 4) Contact any outside vendors and/or consultants that may become available during the course of the semester.

IV. PROGRESS TOWARDS OBJECTIVES

As of March 22, 2005 the members of IPRO-320 have accomplished the following:

- 1) Installed several sensors and a computer in the greenhouse to monitor and collect temperature and rain data.
- 2) Planted several types of plants and vegetables within the greenhouse, some of which have begun to grow already.
- 3) Met with Roald Gunderson and Professor Britt to find solutions to problems concerning the structure of the greenhouse.
- 4) Submitted several ideas to Aaron Durnbaugh concerning the remodeling of the greenhouse. Many of these ideas are still in the process of being reviewed.
- 5) Completed the IPRO-320 website that displays temperature results from the Greenhouse.

V. EXPECTED RESULTS

The IPRO 320 team expects to achieve multiple objectives, detailed, but not limited to, as follows:

- 1) The team will continue to construct and deliver proposals to the Center for Green Technology for redesign of the cold frames and the head house.
- 2) The team will expect to grow several types of plants and vegetables in the greenhouse that will be dispersed throughout several communities in the Chicago land region.
- 3) The team will also install several fans and other equipment to help control the temperature of the greenhouse year round and overall make the greenhouse more efficient.

VI. SCHEDULE OF TASKS/TEAM ORGANIZATION

The team organized itself into small groups that focus on particular aspects of the project in order to more efficiently achieve our goals. The divisions are structured, subject to change as work progresses and goals are achieved, as follows:

Cold Frame Redesign:

Eric Heischmidt, Aaron Teefey, David Choi

Head House Redesign:

Eric Heischmidt, Noah Smith

Sensor Technology:

Chris Palmisano, Greg Waliczek

Thermal Mass Modifications:

David Choi, Dan Carroll

Outdoor Ventilation Redesign:

Alex Chu

Seed Selection and Planting:

Megan Popielarz

Project Plan Report:

Ed Carter

Team Website:

Ed Carter, Megan Popielarz

Team Mid-Term Report:

Dennis Bahena

Team Leader/IPRO Meeting Representative

Dennis Bahena

Although to small groups of team members are responsible for their respective tasks, the IPRO 320 team as a whole collaborates to assist and ensure that tasks are accomplished, as well as that all information within deliverables is true and correct.