IPRO 320S05- THE GREENHOUSE PROJECT

Project Plan Report
February 4, 2005

1. 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.

2. 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.

3. RESEARCH METHODOLOGY:

The IPRO 320 team intends to use the following approach to research:

1) Install sensors and a computer in the greenhouse that will monitor and collect temperature, humidity, and wind 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.

4. EXPECTED RESULTS:

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

- The team will install a more comprehensive monitoring system within the greenhouse.

- The team will construct and deliver a proposal to the Center for Green Technology for redesign of the cold frames and the head house.

- The team will also investigate the feasibility of solar heated water to heat plant beds, compost heating, and other conceptual improvements and alterations.

- The group will begin planting in the greenhouse by the end of April.

5. BUDGET/LIST OF ANTICIPATED EXPENSES:

- Sensors and Computer: $200.00
- Damper: $200.00
- Lumber: $50.00
- Seeds: $5.00

Some of these expenses may be covered by the Center for Green Technology in addition to the IPRO Office.

6. ASSIGNED RESPONSIBILITIES:

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

Non-Traditional Technology Solutions:

*Drip Irrigation System***:** L. Justin Harris
*Compost Heat***:** Aaron Teefey

Project Plan Report:

Ed Carter

Team Website:

Ed Carter, Megan Popielarz

Team Mid-Term Report:

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.