

## 2004 Undergraduate Student Project Description

### Department of Bioresources Engineering

**Project Title:** Instrumentation Course Laboratory Development

**Faculty/Staff Sponsor:** Eric Benson

**Area of Study:** Instrumentation

#### **Project Description:**

Background: As part of the curriculum changes in the department, a new concentration in Applied Electronics and Controls is being developed. To fit the new curriculum, the instrumentation course (EGTE 443) course is being revised. In the revision and development of the courses, new laboratory experiments and projects have to be developed.

In the revision, advanced computerized data acquisition hardware and software (LabVIEW and/or MATLAB) would be incorporated in the laboratories.

Specific ideas for the lab could include:

- Pressure, load cells and strain gauges
- Temperature sensing
- Position and posture measurement
- Fluid measurements
- Non contact sensing including ultrasonic, IR, and/or machine vision

Proposed Research: The student would be responsible for developing multiple laboratories. For each credit taken, the student would be responsible for the complete development of two laboratories. Each laboratory would have to have a real world parallel or application. The student researcher would be responsible for research on appropriate sensing technology, fabrication of any test equipment, sensor selection, integration in the automated data analysis system, testing the system and development of supporting information for the lab.

Students can work for credit in place of EGTE 443 (Instrumentation)

**Student Qualifications:** Completion of EGTE 111/115 and EGTE 244 (Electricity).