

Graduate Module: Introduction to Control Systems for Applications in Agriculture

Instructors:

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Background: The module will introduce multiple elements required to build a real-time data acquisition system and controller for agriculture applications. Topics will include: 1) sensor selection and calibration; 2) interface and communication protocols; 3) actuators and drivers; 4) feedback control systems and analog controllers; 5) real-time computer control using single board computers; and 6) programmable logic controllers with emphasis on industry applications.

Prerequisites:

Engineering undergraduate degree or equivalent.

Delivery: This module will be comprised of 6 weeks of 2-hour lectures, discussions, and lab work. The students will discuss the data acquisition and control system they build, choose sensor, simulate the system response and develop a control algorithm.

Evaluation: Assessment of this module will be in the form of participation in the lectures, one report on building a control system for agriculture application delivered at the fourth week and project demonstration at the end of module.

Class Participation: 10%

Assignments: 20%

Report: 40%

Project demonstration: 30%

Week	Topic
1 st Week	Sensor selection and calibration
2 nd Week	Interfacing and communication protocols
3 rd Week	Electric; hydraulic; pneumatic actuators
4 th Week	Feedback control systems and analog controllers
5 th Week	Real-time computer control
6 th Week	Programmable logic controllers