**School of Engineering**
**University of Guelph**
**Digital Process Control Design, ENGG*4280**
**Course Description and Outline**
**Winter 2004**


| **Instructor:** | **GTA's:** | | **Lab Supervisor** |
|---|---|---|---|
| Ken Bennett P.Eng. | Stephen Coe | Lijun Wang | Alan Miller |
| kbennett@uoguelph.ca | scoe@uoguelph.ca | lijun@uoguelph.ca | akmiller@uoguelph.ca |
| Office Hours: TBA | Office Hours: TBA | Office Hours: TBA | Room THRN 1126 |


**Lectures:**
Tue&Thu 8:30-9:50 LA 204

**Lab Sections:**

| | | | |
|---|---|---|---|
| Mon&Wed | 12:30-1:20 | THRN 1126 | Sec 103 |
| Mon&Wed | 1:30-2:20 | THRN 1126 | Sec 102 |
| Mon&Wed | 2:30-3:20 | THRN 1126 | Sec 101 |

**Textbook:**
No text is specified since reference material will come from a wide variety of sources.

**Course Description:**
This is a course that gives relevance to the theory of computer automation by associating the concepts through a concurrent application lab. Students will quite literally take a 'black box' approach to dynamic systems and focus on the design of suitable process control algorithms to regulate their output, based certain inputs. Experience of basic systems and control theory will be assumed, however, background concepts specific to digital signals will be reviewed as needed in order to discuss more advanced material. The following topics comprise the general framework of study.

- Design of sampled data control systems
- Digital signal processing
- Implementing computers as PID controllers
- Fuzzy logic control
- Advanced control techniques

**Learning Objectives:**
The purpose of this course is to develop confidence and a working familiarity with the control of dynamic systems with a computer. Emphasis will also be given to the structure and importance of a good working team. Using a company analogy, the group experience will be given a heightened imperative through the awareness of teamwork and leadership.

**Evaluation:**

| | | |
|---|---|---|
| Final Lab Report | 30% | (group lab report - **March 31st 4:30pm**) |
| Group Report | 5% | (organization of team - **Jan 21st 4:30pm**) |
| Problem Assignments | 15% | (3 sets - due dates TBA) |
| Midterm | 20% | (in-class - **Feb 26th 8:30am-9:50am**) |
| Final Exam | 30% | (**April 5th 2:30pm-4:30pm**) |