

**EE6203            COMPUTER CONTROL SYSTEMS**

Acad Unit:            3.0  
 Prerequisite:        NIL  
 Effective:            Acad Year 2000-2001  
 Last update:        20 March 2000

**OBJECTIVE**

Practically all control systems that are implemented today are based on computer control. It is therefore important to understand computer-controlled systems well. The purpose of the course is to provide a thorough background for understanding, analyzing and designing of computer-controlled systems. The objectives include equipping students with the control theory that is relevant to the analysis and design of computer-controlled systems. Topics such as time-domain analysis, frequency domain analysis, state-space analysis will be covered. The design and implementation issues of computer-controlled systems will also be extensively discussed.

**DESIRED OUTCOME**

On completion of the course, the students should be able to understand specific theories of computer-controlled systems, carry out the design of controllers to meet desired performance specifications through various design techniques such as the frequency and state-space approaches, understand practical implementation techniques and considerations from a software and hardware point of view.

**OTHER RELEVANT INFORMATION**

**A background with a fundamental course on continuous-time control systems is desirable.**

**CONTENT**

Discrete-time system modeling and analysis. Cascade compensation. State-space design methods. Optimal control. Design and implementation of digital controllers.

**ASSESSMENT SCHEME**

Continuous Assessment	20%
Final Examination	80%

**TEXTBOOK**

1. Kuo B. C., Digital Control Systems, 2<sup>nd</sup> Edition, Saunders College Publishing, 1992.

**REFERENCES**

1. Franklin G. F., Powell J. D. and Workman M. L., Digital Control of Dynamic Systems, Addison-Wesley, 1990.
2. Middleton R. H. and Goodwin G. C., Digital Control and Estimation - A Unified Approach, Prentice-Hall, 1990.