

## City University of Hong Kong

**Information on a Course  
offered by Department of Electronic Engineering  
with effect from Semester A 2012/13**

**Part I**

Course Title: Discrete Time Control Systems

Course Code: EE6430

Course Duration: One Semester (13 weeks)

No. of credits: 3

Level: P6

Medium of Instruction: English

Prerequisites : Nil

Precursors : EE3114 Systems and Control; or equivalent

Equivalent Course :

Exclusive Courses:

**Part II****Course Aims:**

This course aims to provide students with knowledge of modern control system, covering the topics of state space control design, online identification techniques, and real time control implementation.

**Course Intended Learning Outcomes (CILOs)**

*Upon successful completion of this course, students should be able to:*

No.	CILOs
1.	Apply state space control design and analyse the performance of the controlled system
2.	Apply online identification techniques to obtain the system model of a plant
3.	Construct real time control system

**Teaching and Learning Activities (TLAs)**

*(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)*

CILO	Teaching and Learning Activities
CILO 1,2,3	Lecture, tutorial, in-class exercise and mini-project

Timetabling Information

Pattern	Hours
Lecture:	26
Tutorials:	13*
Laboratory:	
Other activities:	

\* Some tutorials will be conducted in the laboratory and students are to apply the methodology learnt in the course for controlling a practical system.

**Assessment Tasks/Activities**

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

	Type of assessment tasks	Weighting (if applicable)
Continuous Assessment	Quizzes, Test, Mini-project and report	60%
Examination	Written examination	40% 2 hours

Remarks: To pass the course, students are required to achieve at least 35% in course work and 35% in the examination.

**Grading of Student Achievement:**

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Letter Grade	Grade Point	Grade Definitions
A+	4.3	Excellent
A	4.0	
A-	3.7	
B+	3.3	Good
B	3.0	
B-	2.7	
C+	2.3	Adequate
C	2.0	
C-	1.7	
D	1.0	Marginal
F	0.0	Failure

**Constructive Alignment with Programme Outcomes**

PILO	How the course contribute to the specific PILO(s)
1,2,3,4,5	This course aims to provide students with knowledge in the major areas of discrete time control systems. Upon completion of this course, students will gain general knowledge of control design for real time control engineering.
2,3,4,5	Students are required to complete an assignment designed to gain practical hands-on experience on how real time control are carried out.

**Part III**

**Keyword Syllabus:**

Fundamentals

Introduction to basic control engineering concept, discrete time fundamentals, D/A and A/D designs, sampling theorem

Control methodology

Classical control design, state space feedback control, observer design, optimal control

Real time Implementation

Real time UD identification, real time control

**Recommended Reading:**

Discrete Time Control Systems, Katsuhiko Ogata, Prentice Hall

**Online Resources (if any)**

Nil