Faculty of Engineering & Technology

Control Systems 2

Information :

Course Code :	CMP 472	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Electrical Power Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Sameh Abdelhaleem Mohamed Abdelsalam	4
Teaching Assistant	Youmna Elsayed Abd Elalem Mohamed Sayed Ahmed	

Area Of Study :

ÅDevelop student knowledge about the fundamentals of digital control systems.
ÅPrepare students to analyse and design digital control systems.
ÅTrain students to evaluate the performance of digital control systems.
ÅTrain students to evaluate the performance of digital control systems.

Description :

Optimal control of continuous systems, Stability of closed loop systems, Discrete control systems, Z-Transform, Modified Z-Transform, Impulse T.F., Static error, Jury stability analysis, Frequency response, Classical design of D.T.C. system, Design of D.T.C. with dead zone.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Explain the fundamentals of z-transform technique and digital control systems.
2 -	Demonstrate the principles of stability analysis and steady-state errors of digital control systems.
b.Intellectual Skills: :	
1 -	Apply z-transform technique for solving digital control system design problems.
2 -	Design and analyze the performance of digital control systems.
3 -	Evaluate the stability test of digital control systems.
4 -	Use software tools in designing and evaluating digital control systems.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Digital control systems definition	5	3	2
Z-transform properties and theorems	10	6	4
Inverse Z-transform using different methods	10	6	4
Impulse sampling and data hold	5	3	2

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Pulse transfer function	10	6	4
Mapping between the s-plane and z-plane and Jury stability analysis	10	6	4
Transient and steady-state response, error analysis	15	9	6
Design based on the root-locus method	10	6	4

Teaching And Learning Methodologies :

- Interactive Lecturing
- Discussion
- Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final exam	40.00		
In Class Quizzes	10.00		
Mid-Term exams	30.00		
Performance/Attendance	20.00		

Recommended books :

1. Text Book:
Katsuhiko Ogata, Discrete-Time Control Systems, Prentice-Hall International, Inc., 2nd edition, 1995.