

MODULE DESCRIPTION FORM

Module Name:	
Control systems II	
Module Code:	
WBM-52-04	
Semester / Year:	
second semester- 2025	
Date of Preparation of this Description:	
22-1-2025	
Available Attendance Formats:	
Class Attendance	
Total Credit Hours / Total Units:	
75 \ 3	
Name of the Course Coordinator (if there are multiple names):	
Qayssar Ayad Ahmed qayssar.ayad@uowa.edu.iq	
Module Objectives:	
Module Objectives	<ol style="list-style-type: none"> 1- Building the student scientifically and qualifying him to understand the applications of digital control in some scientific and engineering fields, especially electrical and mechanical applications. 2- Building and preparing the student psychologically to play his role as a reliable engineer in this field. 3- Urging the student to be creative and think about specialization projects and keep pace with the development taking place in this field in terms of the basis of digital control in engineering work systems. 4- Identify the types of digital control and some of their practical applications.
1. Teaching and Learning Strategy	
Strategy:	The main strategy that will be adopted in developing the main features of this module to encourage student's participation in the exercises, while at the same time refining and expanding their critical thinking skill. This will be achieved through classes, interactive tutorials and by considering type of simple

experiments involving some sampling activities that are interesting to the students. Building and preparing the student psychologically to play his role as an engineer.

2. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	6	Introduction to digital engineering control systems and methods of representing systems	Introduction to Discrete-Time Control System. Review of Mathematical Foundation.	Lectures DATA SHOW	Surprise exams and classroom activities
3-4	6	Analysis of digital control systems and design of a traditional digital controller	Analysis of Discrete-Time Systems. Design of Conventional Discrete-Time Controllers.	Lectures DATA SHOW	Surprise exams and classroom activities
5-6	6	Introduction to theory state space	State-space modeling	Lectures DATA SHOW	Surprise exams and classroom activities
7-8	6	How to analyze using the method (controllability and observability)	controllability and observability	Lectures DATA SHOW	Surprise exams and classroom activities
9-10	6	the definition, z-transform And analysis methods	Sampling theorem Z-transform	Lectures DATA SHOW	Surprise exams and classroom activities
11-12	6	How to design a digital controller using state-space method	Design of digital control systems using state-space methods	Lectures DATA SHOW	Surprise exams and classroom activities
13-14	6	Recognition digital PID controllers	Digital PID controllers and tuning	Lectures DATA SHOW	Surprise exams and classroom activities

Module Evaluation

Quizzes (4%), Assignment (3%), lab. (10%), attendance (3%), Mid exam (30%), FINAL exam (50%)

University of Wraith Al-Anbiyaa / College of Engineering / Biomedical Engineering
Department Course Description

Learning and Teaching Resources.	
Required textbooks (curricular books, if any)	1- Modern Control Engineering, (5th Edition) By: Katsuhiko Ogata. Mechanical Engineering, University of Minnesota. 2- Control Systems Engineering, (6th Edition) By: Norman S. Nise. Electrical and Computer Engineering Department at California State Polytechnic University.
Main references (sources)	Modern Control Engineering, (5th Edition)
Recommended books and references (scientific journals, reports...)	1- Internet files. 2- All solid scientific journals and sites that are related to the broad concept of engineering control
Electronic References, Websites	Tracking Scientific websites to view recent developments in the prescribed subject For fifth year students.

