Jordan University of Science and Technology

Faculty of Engineering

Electrical Engineering Department

EE442 Instrumentation And Control Systems Lab - JNQF Level: 7

Summer Semester 2023-2024

Course Catalog
1 Credit Hours. Measurement of motor characteristics: armature connection and field connection. Transient response of motors. Closed-loop position and speed control systems. Dead band and transient characteristics. Passive network compensation. Stabilization with tachogenerator feedback: frequency response measurement. Mechanical, thermal and light measurements.
Teaching Method: On Campus

Text Book	
Title	Lab Manual
Author(s)	JUST
Edition	2nd Edition
Short Name	Main Reference
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref. 1	Modern Control Systems	R.C. Dorf & R.H. Bishop	12th Edition	
Ref. 2	Modern Control Engineering	K. Ogata	4th Edition	

Instructor	
Name	**Prof. Issam Smadi**
Office Location	E2-L3
Office Hours	
Email	iasmadi@just.edu.jo

Class Schedule & Room

Section 2:
Lecture Time: Mon, Wed : 13:00 - 16:00
Room: LAB

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
244401	EE440 Control Systems	Prerequisite / Study
243242	EE324 Electronic Circuits Lab	Prerequisite / Study
243412	EE341 Measurement Systems And Sensors	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to the lab facilities	
Week 2	Operational Amplifiers	
Week 3	DC Servo Sensors	
Week 4	DC Servo Motor Speed Control	
Week 5	DC Servo Motor Position Control	
Week 6	PID Control for Position Control System	
	Analogue Computer Simulation	
	Passive Network Compensation	
	Magnetic Levitation	
	Closed-loop Temperature Control	
	Liquid Level Control System	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Use operational amplifiers circuits and sensors in feedback control system. [15SO6] [1L7S1]	29%	
Construct open loop and closed loop control systems with emphasis on stability of the system, applying different controller's structures for processes with disturbance. [25SO6] [1L7S1]	47%	
Analyze electrical systems in frequency domain. [10SO6] [1L7S1]	19%	
Demonstrate effective collaboration and personal responsibility within a team setting. [1SO5] [1L7C3]	5%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
				5	95	

Relationship to NQF Outcomes (Out of 100%)	
L7S1	L7C3
95	5

Evaluation	
Assessment Tool	**Weight**
Final	40%
Lab Works	20%
Midterm Exam	30%
Quizzes	5%
Performance	5%

Policy	
Mid-term Exam	Theoretical and experimental
Lab Reports	Pre and post-lab reports
Quizzes	Pre-announced
Final Exam	Theoretical and experimental

Date Printed: 2024-06-11