



Jordan University of Science and Technology
Faculty of Engineering
Mechanical Engineering Department

ME542 Industrial Automation

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. Design and analysis of mechatronics and automation systems. Selection and integration of actuators, sensors, hardware, and software. Design of logic control systems. Pneumatic and hydraulic systems design and simulation, Ladder Programming, PLC's integration and programming. Case studies including automation systems Finite state machine methods. Feedback control. Safety logic systems. Case studies including automation systems, mobile robots, and unmanned vehicle systems.

Text Book

Title	Industrial Automation ? Circuit Design and Components
Author(s)	David W. Pessen
Edition	2nd Edition
Short Name	Text Book
Other Information	

Instructor

Name	Dr. AHMAD BATAINEH
Office Location	-
Office Hours	
Email	ambataineh2@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Mon, Tue, Wed : 13:00 - 14:30
Room: منصة الكترونية

Prerequisites		
Line Number	Course Name	Prerequisite Type
254621	ME462 Automatic Control	Prerequisite / Study
254250	ME425 Microcontroller Applications	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Motion classification and selection of actuators. Industrial Sensors.	
Week 2	Introduction to automation and examples. Introduction to projects.	
Week 3	Switching algebra.	
Week 4	Selection of switching elements.	
Week 5	Design of sequential control circuits-Ladder diagram	
Week 6	Sequence charts	
Week 7	Design of sequential control circuits-pseudo-Karnaugh map.	
Week 8	Design of sequential control circuits-pseudo-Karnaugh map.	
Week 12	Flexible automation ? Programmable Logic Controllers (PLC).	
Week 11	Programming the PLC. PLC demo.	
Week 9	Cascade Method	
Week 10	Huffman Method	
Week 13	Case studies on automation	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Introduce Motion classifications, and proper Sensor/Actuator selection [1SLO1]	100%	
Design, analysis and simulation of low cost Hard-Wired Relay circuits of electro-pneumatic and electro-hydraulic systems to automate industrial processes. [1SLO2]	100%	
Design, analysis and simulation of PLC Ladder programs to control industrial processes. [1SLO7]	100%	

Relationship to Program Student Outcomes (Out of 100%)																	
A	B	C	D	E	F	G	H	I	J	K	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
											100	100					100

