The University of Jordan School of Engineering										
Department				Course Name			Course Number		· Semester V	
Mechanical Engineering				Robot	ics		0	904521		
2019 Course Catalog Description										
In this course students are familiarized with the basics of robotics. It covers: applications of robots, spatial										
· ·	descriptions and transformations, forward and inverse kinematics, velocities and static forces, Lagrange formulation,									
INCWIOI	Newton-Euler Method, manipulator dynamics, trajectory generation and methods of controlling a robotic arm. Instructors									
					Instr		e Hour	c	Lecture Time	
	Nam	ie	E	-mail	Sec	Ulli	e nour	8		
					Text	Books				
						book 1			Text book 2	
Title				Lecture no	tes					
Author((s)									
Publishe	er, Year,	Edition								
					Refe	rences				
Books	Books 1. Robot Modeling and Control, by M.W. Spong, S. Hutchinson, and M. Vidyasagar, 2 nd edition, Joh Wiley& Sons, 2006. 2. Introduction to Robotics: Mechanics and Control, by John J. Craig, 3rd Edition, Addison Wesle									
Journal	s	Publish	ing Company	7, 2003.						
Internet										
				F	Prerec	quisites				
Prerequ	isites by	topic	-							
Prerequ	isites by	course	Mechanics of Machines 0944331+ System Dynamics and Control 0904418							
Co-requ	isites by	course	-							
Prerequ	isite for		-							
				Тс	pics	Covered				
Week			Тор				Chap	ter in Text	Sections	
1	Kinema	tics of Partic	les							
2-3	Spatial descriptions Design Concepts									
4-5	Forward Kinematics									
6-7	Inverse Kinematics									
8-9										
10-11										
12-13	12-13 Building robots with MATLAB									
14-16	16 Trajectory planning (Joint space and Cartesi					bace)				

	Mapping of Course Outcomes to ABET Student Outcomes
SOs	Course Outcomes

1	1. Ability to derive the Forward & Inverse Kinematics of a simple robotic arm.											
	2. Ability to relate the joint velocities to the Cartesian ones and vice versa of a simple 2 degrees of freedom manipulator arm.											
2	*											
-	singularities, static torques, and workspace to design a 3 (or 3+) degrees of freedom robotic arm.											
	4. Ability, as a team, to design a 3 (or 3+) degrees of freedom robotic arm and show the details in a report.											
3	3 5. Ability, as a team, to deliver an oral presentation.											
						lation						
Assessment Tools				Expected	d Due Date				Weight			
Mic	lterm								30%			
Qui	zzes/HW	s/Project	-						20%			
Fin	al Exam								50%			
		(Contril	bution of Co	urse to Mee	et the Profe	ssional Compo	nents				
For	ward kine						atics are derived.		ionships are			
dete	rmined w	ith the us	se of th	e Jacobian ma	trix. Path pla	anning and tra	ajectory of motion	on are also dise	cussed in this			
cou	rse. The c	ourse inco	orporate	es a semester	project.							
				Relat	ionship to S	tudent Out	comes					
	SOs	1		2	3	4	5	6	7			
Availability		X		X	Х							
And												
			hip to I			g Program (Objectives (M	EPOs)				
		elationsl			Engineering	g Program (PO3	Objectives (M MEPO4		ИЕРО5			
	R	elationsl		Mechanical	Engineering				ЛЕРО5			
	R	elationsl		Mechanical MEPO2	Engineerinș ME	PO3	MEPO4		меро5			
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