Robotics Course (Advance Level) 60 Days (120 Hrs.)

Sr. No.	Chapters	Sub Chapters	Points in Sub Chapters
1	Introduction	History	
		Robotics Terminology	
		Definition	
		Law of robotics	
		Safety	
		The Robot control Loop	
		How do robot works	
2	Type of Robots	Industrial Robots	6 Axis SCARA robot , 4 axis, cartesian robot and cobot
		Mobile Robots	
		Educational Robot	
		Domestic Robots	
3	Robot Components	Manipulator or Rover	
		End Effector	Gripper or Tool
		Actuators	Locomotion (Leg , wheel, other exotic means) , Manipulation(Degree of freedom, Arms, Greepers)
		Sensors	Light , sound , heat, chemical, force, object proximity, Physical orientation/ position, magnetic / electric field, Resistance
		Controller	
		Processor	
		Software	
4	Robot Payload , Reach		
5	Degree Of Freedom		
6	The Purpose of		

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	robots		
7	Robotics Application	Exploration	Space Missions, Robots in Antarctica, exploring Volcanoes, Underwater Exploration
		Medical Science	Surgical Assignment
		Assembly	Factories part Handling, Painting,Assembly, Surveillance, Security(bomb disposal ets.), Home Help (Grass Cutting,home cleaning etc.)
8	Advantages		
9	Disadvantages		
10	Robot Controller Hardware details		
11	Device configuration & wiring for external I/O		
12	Standard Robot Settings		
13	Robot operation & teaching.		
14	Teach Pendant	Introduction of Teach Pendant, Screen and Keys Description	
		Function of Program Pendant	
		Hands on experience on Teach Pendant for robot teaching	
15	Software: RT toolbox 3	Robot software RT toolbox 3 Basic	
		Programming with RT toolbox 3	
		Communication settings in RT toolbox 3	
		Hand settings for robot controller IOs	

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		Hands on experience on RT Toolbox 3 for robot teaching	
		Movement of all robo axis in different coordinate system	
		Creating New Program, Path Creation, editing program	
		Creating Jog, editing jog, copying Jog, deleting Jog	
		Change robot speed	
16	Soft skill Development	Pick and Place, Tracing Line	Robot Operations in Simulation Mode
			Actual Robot operations.
17	Maintenance/ troubleshooting		
18	Live Applications	Vision System 1)shape sorting 2)color sorting 3)calibration of robot and camera	Mitsubishi PLC Basics, program, basic settings, Robot interface with PLC Settings (IP address, communications: TCP IP,CC-Links,ModBus etc.)
			Visual Basics Library Settings , Image capture program, HSV program, HSV value settings, Vision Program (Shape sorting, color sorting)
			Robot Basics, program, basic settings, Robot interface with PLC Settings (IP address, communications: TCP IP,CC-Links,ModBus etc.)
		Pick and place	
		Palletization	

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		Conveyor system	
		Drawing	
		Poka yoke (Fixture)	
		Letter tracing	
19	Live Projects		